SANSEI

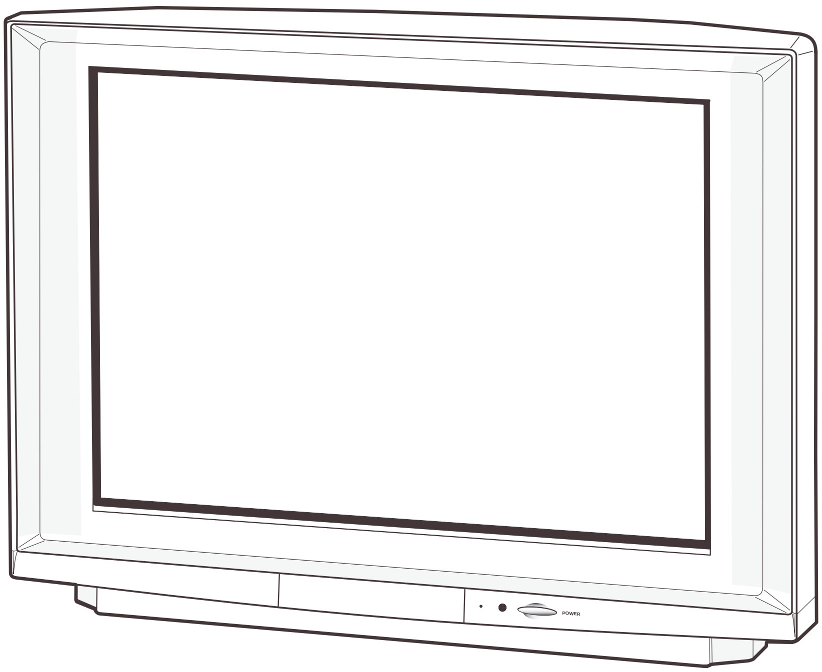
FILE NO.

SERVICE MANUAL Colour Television

Model No. TS5129F

(Argentina)

Service Ref. No. TS5129F-00





Specifications

Power Source . . . . AC220V, 50Hz / 60Hz
Receiving System . . . . . PAL (M/M, N/N), NTSC (M/M)
Channel Coverage
Antenna mode VHF: CH02-CH13, UHF: CH14-CH69
CATV mode VHF band: CH01-CH13, Mid band: CH14-CH22
Super band: CH23-CH36, Hyper band: CH37-CH64
Ultra band: CH65-CH94 and CH100-CH125
Low mid band: CH95-CH99
Video IF 45.75MHz
Aerial Input Impedance 75Ω
Input Terminals
AV1 (Video): Composite Video Input (Phone Jack) x 1
S-Video Input (Separated Y/C) DIN 4-pin Jack x 1
AV1 (Audio): L/R Stereo Input (Phone Jack) x 1 set
AV2 (Video): Composite Video Input (Phone Jack) x 1
AV2 (Audio): L/R Stereo Input (Phone Jack) x 1 set
AV3 (Video): Component Y, CB, CR Input (Phone Jack) x 1 set
AV3 (Audio): L/R Stereo Input (Phone Jack) x 1 set
Output Terminals
Video Monitor Output: Phono jack x 1
Audio Monitor Output: L/R Stereo Output (Phone Jack) x 1 set
Headphone Jack: Mini stereo jack x 1
Sound Output (RMS) . . . 5W + 5W
Speaker . . . . 6cm x 12cm x 2 pcs.
Dimensions . . . . 749(W) x 586(H) x 486(D)mm
Weight . . . . approx. 41.5 Kg

Specifications subject to change without notice.

C8AP

Product Code: 111376512

Original Version

Chassis Series: LB4-C

Give complete “SERVICE REF. NO.” for parts order or servicing. It is shown on the rating plate at the cabinet back of the unit.

This T.V. receiver will not work properly in foreign countries where the television transmission system and power source differ from the design specifications. Refer to the specification table.

Contents

Safety Notice

SAFETY PRECAUTIONS

1: An isolation transformer should be connected in the power line between the receiver and the AC line when a service is performed on the primary of the converter transformer of the set.

2: Comply with all caution and safety-related notes provided on the cabinet back, inside the cabinet, on the chassis or the picture tube.

3: When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as, control knobs, adjustment covers or shields, barriers, isolation resistor-capacitor networks etc.. Before returning any television to the customer, the service technician must be sure that it is completely safe to operate without danger of electrical shock.

X-RADIATION PRECAUTION

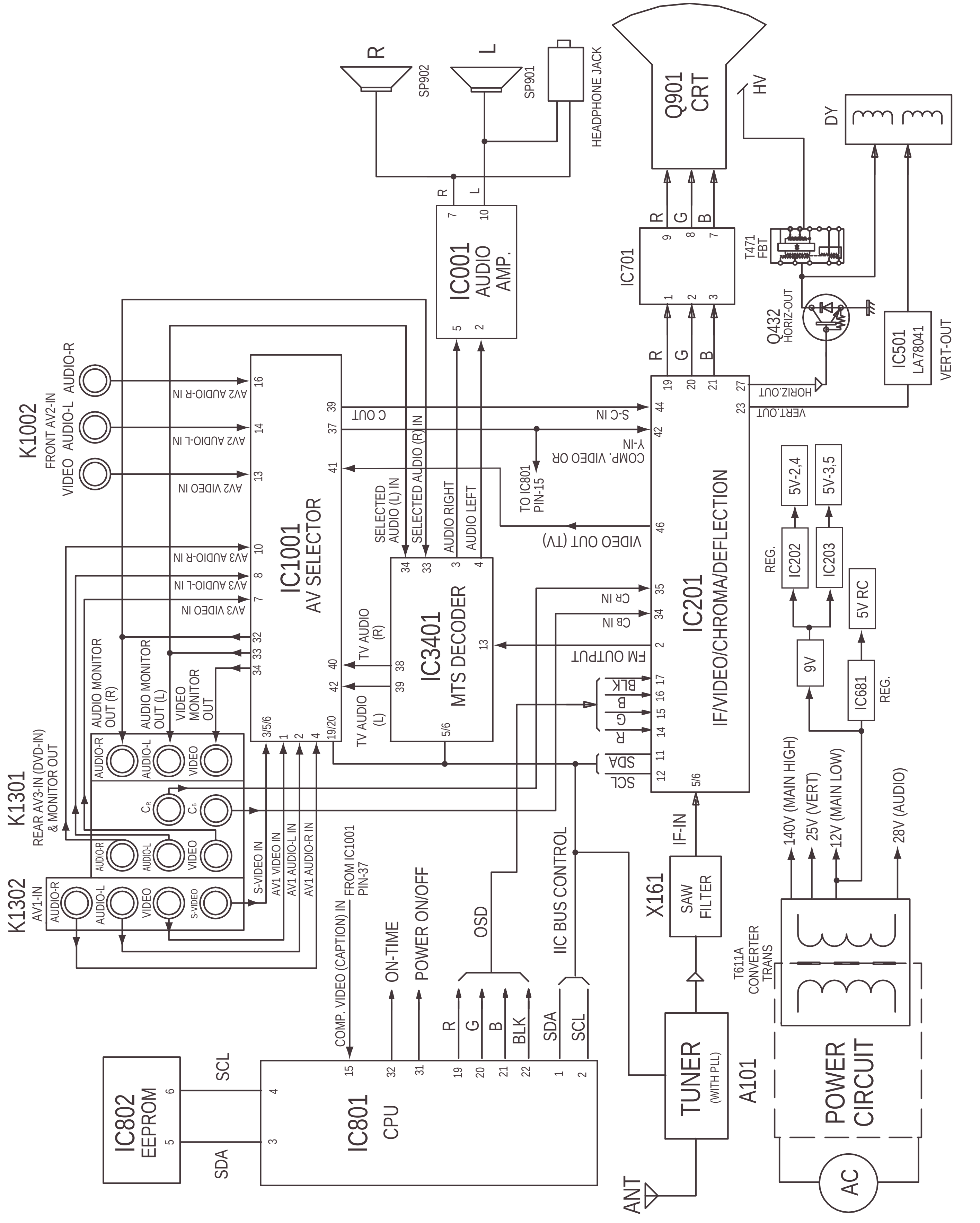
The primary source of X-RADIATION in television receiver is the picture tube. The picture tube is specially constructed to limit X-RADIATION emissions. For continued X-RADIATION protection, the replacement tube must be the same type as the original including suffix letter. Excessive high voltage may produce potentially hazardous X - RADIATION. To avoid such hazards, the high voltage must be maintained within specified limit. Refer to this service manual, high voltage adjustment for specific high voltage limit. If high voltage exceeds specified limits, take necessary corrective action. Carefully follow the instructions for + B1 volt power supply adjustment, and high voltage check to maintain the high voltage within the specified limits.

PRODUCT SAFETY NOTICE

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by mark ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. It is particularly recommended that only parts designated on the parts list in this manual be used for component replacement designated by mark ⚠. No deviations from resistance wattage or voltage ratings may be made for replacement items designated by mark ⚠.

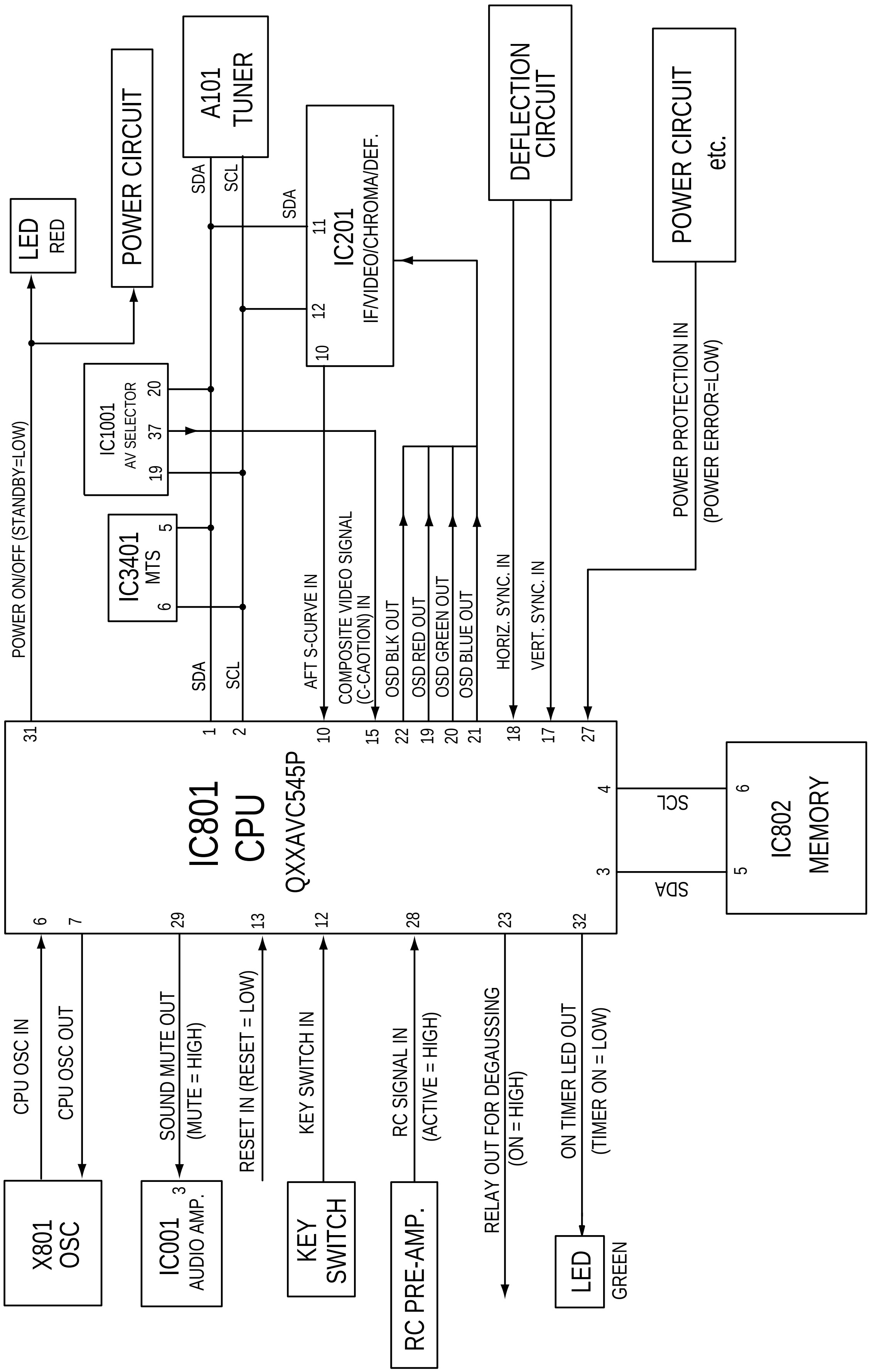
Chassis Block Diagrams

MAIN SIGNAL PROCESSING CIRCUIT



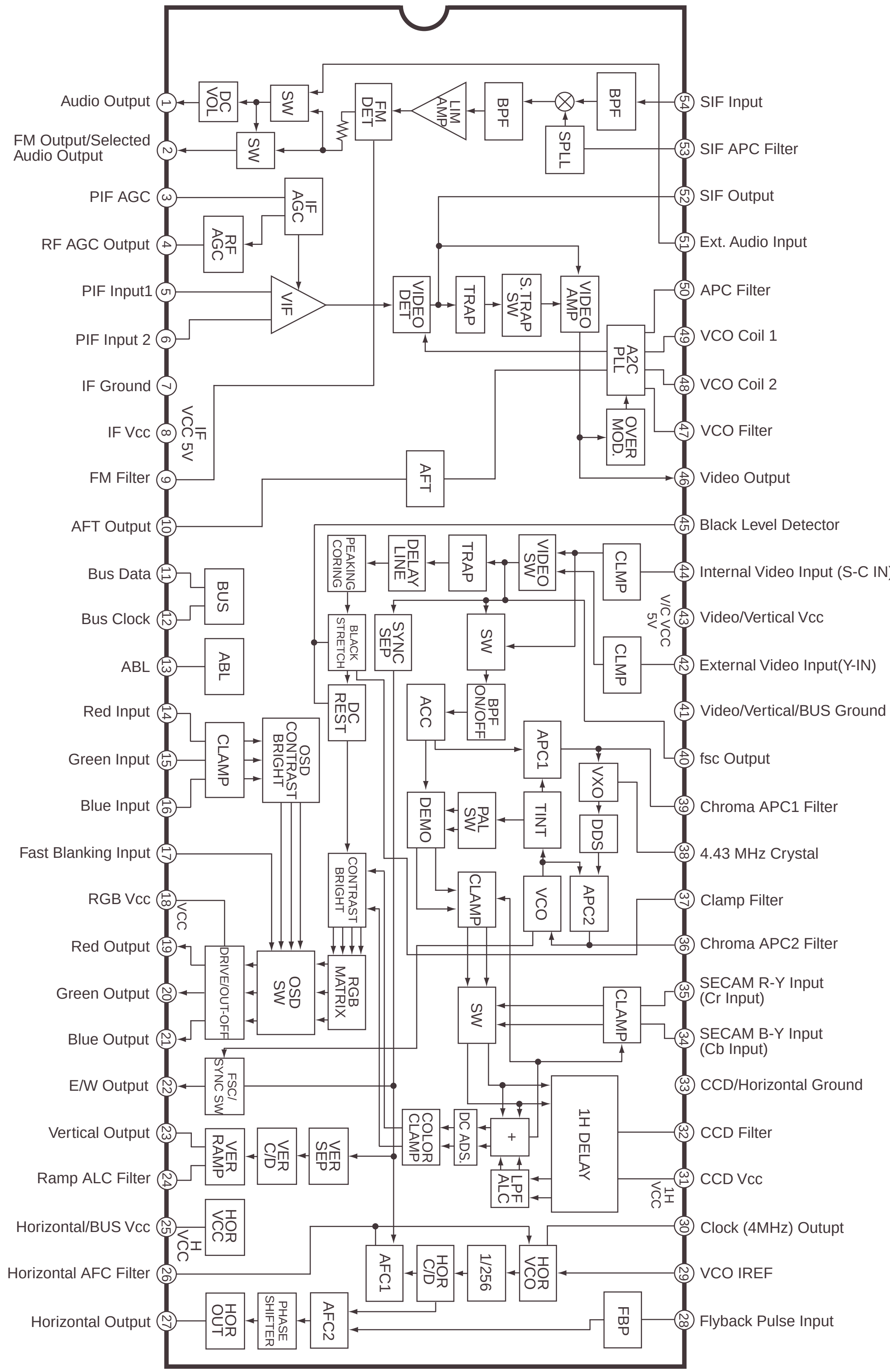
Chassis Block Diagrams

SYSTEM CONTROL



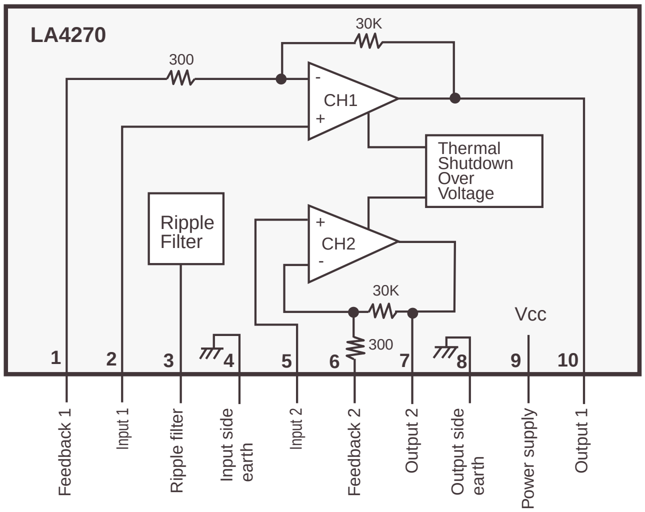
IC Block Diagrams

IC201 < IF/Video/Chroma/Def. > LA76828

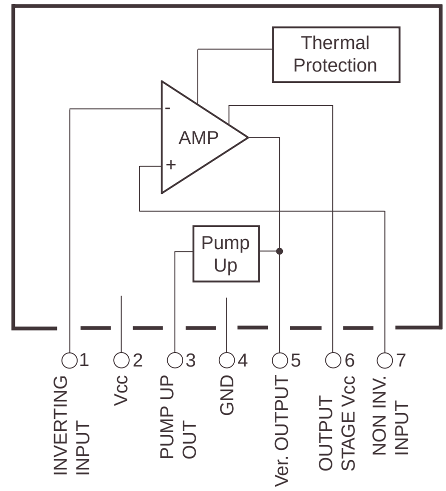


IC Block Diagrams

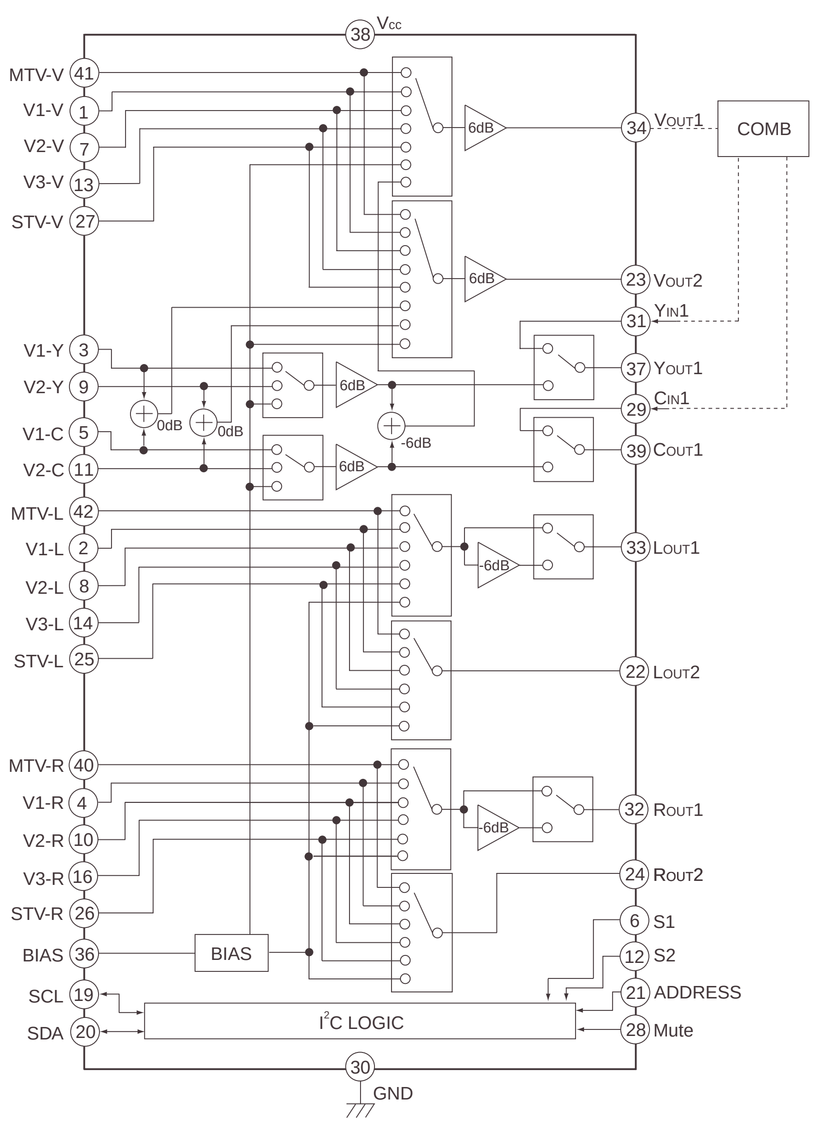
IC001 < Audio AMP. > LA4270-E



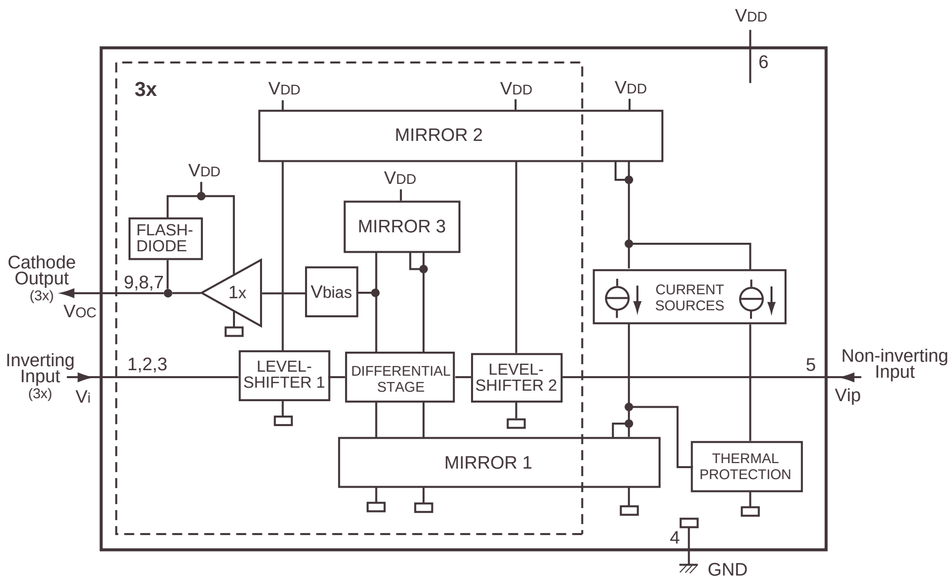
IC501 < Vertical Output > LA78041-E



IC1001 < AV Selector > MM1313BD

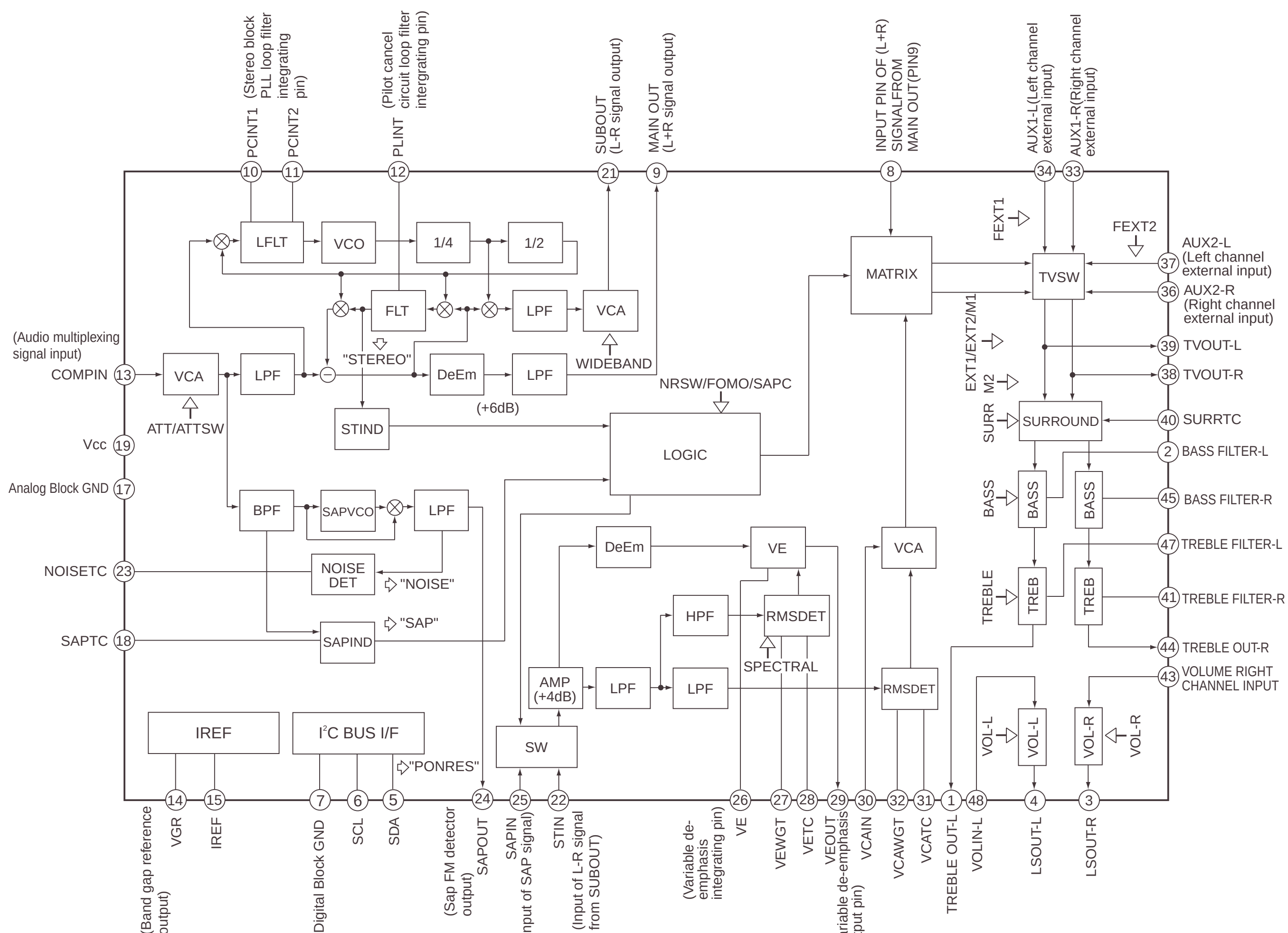


IC701 < Triple Video Output Amplifier > TDA6103Q/N3



Note: One amplifier shown.

IC3401 < MTS Decoder, Audio Control & Switch > CXA2134Q-T6



Service Adjustments

General

This set has an On-screen Service Menu system included in the CPU that allows remote operation for most of the service adjustments.

IC802 (EEPROM) Replacement

When IC802 (EEPROM) is replaced, IC801 (CPU) will automatically write the initial reference data into IC802 for basic TV operation. However, the bus data should be checked and some bus data should be set up before attempting the service adjustments. (See pages 9 ~ 12 for detailed information.)

Initial Bus Data Setup

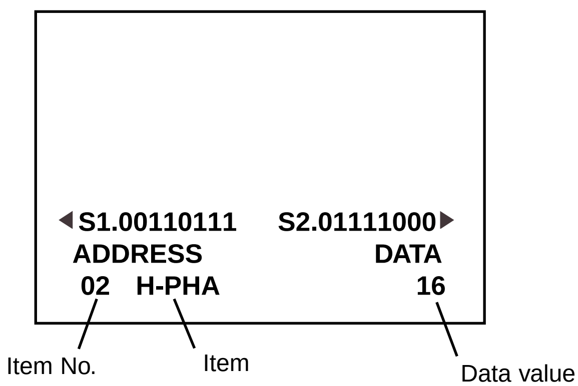
Note: When IC802 (EEPROM) is replaced, following Service Menu should be set up for proper TV operation before attempting the service adjustments.

NO.01 RFAGC (Adjust the data 11 to 14)
NO.02 H-PHA (Adjust the data 10 to 14)
NO.05 V-SCO (Adjust the data 16 to 23)
NO.06 V-LIN (Adjust the data 30 to 28)
NO.11 VLI60 (Adjust the data +1 to 0)
NO.17 OSDHP (Adjust the data 30 to 40)
NO.18 OSDC (Adjust the data 18 to 30)
NO.19 EWDC (Adjust the data 44 to 35)
NO.20 EWAMP (Adjust the data 16 to 19)
NO.21 EWTL (Adjust the data 28 to 30)
NO.22 EWCTP (Adjust the data 07 to 09)
NO.23 EWCBM (Adjust the data 08 to 11)
NO.27 EWTLN (Adjust the data -4 to -1)
NO.28 EWCTPN (Adjust the data -3 to -1)
NO.29 EWCBN (Adjust the data -5 to -2)
NO.43 B-YD (Adjust the data 08 to 09)
NO.53 RBAG (Adjust the data 08 to 09)
NO.56 RBAGN (Adjust the data -2 to 0)
NO.58 RBDN (Adjust the data -2 to -5)
NO.60 RBBDN (Adjust the data 03 to 00)
NO.61 COGV (Adjust the data 00 to 03)
NO.62 BLKS (Adjust the data 01 to 00)
NO.87 ZOMCON (Adjust the data -6 to -8)
NO.121 POMT (Adjust the data 05 to 12)
NO.125 CCD (Adjust the data 20 to 30)
NO.09 V-S60 (Adjust the data -1 to -3)
NO.129 EWCTPZ (Adjust the data +1 to +5)

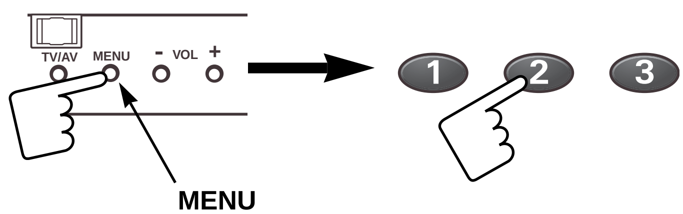
Service Adjustment-1

1. Enter the Service Menu

While pressing the **MENU** button on the television, press the Number Key **2** on the remote control unit.
The Service Menu now appear.

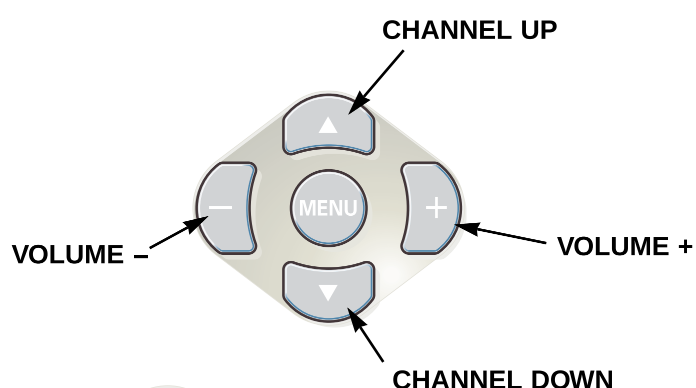


[Service Mode Display]



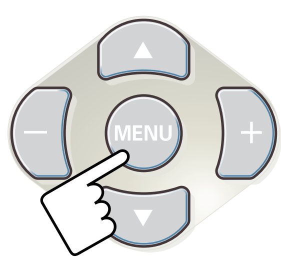
2. Service Adjustments:

Press the **CHANNEL UP**/**DOWN** button on the remote control handset to select the desired service menu item you want to adjust.
Use the **VOLUME +** / **–** button to adjust the data. The **+** or **–** button will increase or decrease the data sequentially.



3. Exit from the Service Menu

Press the **MENU** button to turn off the Service Menu display.
The data which is set in the service mode is stored into the memory IC automatically.



Service Adjustments

On-screen Service Menu

Following table shows the **initial values** which have been stored in the CPU ROM, and items for the service adjustments.
When IC802 (EEPROM) is replaced, check the bus data to confirm they are the same as below. The shaded menu should be checked and be set up or readjusted according to the procedures described in the following pages.
Initial Setup Data marked with an * should be changed from Initial Value Data.

No.	Item	Initial value	Range	Description
01	RFAGC	11→14*	00~63	RF AGC adjustment
02	H-PHA	10→14*	00~31	H-PHASE adjustment (50Hz)
03	V-POS	40	00~63	Vertical position adjustment (50Hz)
04	V-SIZ	46	00~127	Vertical size adjustment (50Hz)
05	V-SCO	16→23*	00~31	Vertical-S compensation (50Hz)
06	V-LIN	30→28*	00~31	Vertical linearity adjustment (50Hz)
07	H-P60	+4	–16~+15	Difference value of H-PHASE adjustment (60Hz)
08	V-P60	0	–32~+31	Difference value of V-POSITION adjustment (60Hz)
09	V-S60	–1→–3*	–64~+63	Difference value of V-SIZE adjustment (60Hz)
10	VSC60	+4	–16~+15	Difference value of Vertical-S compensation (60Hz)
11	VLI60	–2	–16~+15	Difference value of Vertical linearity adjustment (60Hz)
12	H-PHAZ	-1	–16~+15	Difference value of H-PHASE adjustment (Zoom)
13	V-SZZ5	–34	–64~+63	Difference value of V-SIZE adjustment (Zoom, 50Hz)
14	V-SCOZ	0	–16~+15	Difference value of Vertical-S compensation (Zoom)
15	V-LINZ	0	–16~+15	Difference value of Vertical linearity adjustment (Zoom)
16	V-SIZZ6	–35	–64~+63	Difference value of V-SIZE adjustment (Zoom, 60Hz)
17	OSDHP	30→40*	01~255	OSD horizontal position
18	OSDC	18→30*	00~127	OSD contrast
19	EWDC	44→35*	00~63	EW DC (50Hz), Horizontal width adjustment
20	EWAMP	16→19*	00~63	EW Amp. (50Hz)
21	EWTL	28→30*	00~63	EW Tilt (50Hz)
22	EWCTP	07→09*	00~15	EW corner top (50Hz)
23	EWCBM	08→11*	00~15	EW corner bottom (50Hz)
24	EWAMZ	-9	–32~+31	Difference value of EW Amp. (Zoom, 50Hz)
25	EWDCN	0	–32~+31	Difference value of EW DC (60Hz)
26	EWAMN	-2	–32~+31	Difference value of EW Amp. (60Hz)
27	EWTLN	-4→-1*	–32~+31	Difference value of EW Tilt. (60Hz)
28	EWCTPN	-3→-1*	–8~+7	Difference value of EW corner top (60Hz)
29	EWCBN	-5→-2*	–8~+7	Difference value of EW corner bottom (60Hz)
30	EWAMZN	-8	–32~+31	Difference value of EW Amp. (Zoom, 60Hz)
31	EWCOR	0	0, 1	EW COR SW
32	V-SCP	07	00~07	V-SIZE COMP
33	H-SCP	07	00~07	H-SIZE COMP
34	SBIAS	70	00~127	Sub Bias adjustment
35	RBIAS	00	00~255	Red Bias adjustment
36	GBIAS	00	00~255	Green Bias adjustment
37	BBIAS	00	00~255	Blue Bias adjustment
38	RDRIV	64	00~127	Red Drive adjustment
39	GDRIV	08	00~15	Green Drive adjustment
40	BDRIV	64	00~127	Blue Drive adjustment
41	– –	– –	– –	White balance (a lateral line)
42	DRV	– –	– –	Brightness and dark of White balance adjustment
43	B-YD	08→09*	00~15	B-Y DC Level
44	R-YD	08	00~15	R-Y DC Level
45	B-YDN	-1	-16~+15	Difference value of NTSC/PAL-M B-Y DC Level
46	R-YDN	0	-16~+15	Difference value of NTSC/PAL-M R-Y DC Level
47	B-YDD	-1	-16~+15	Difference value of DVD B-Y DC Level (50Hz)
48	R-YDD	-2	-16~+15	Difference value of DVD R-Y DC Level (50Hz)
49	B-YDD6	-1	-16~+15	Difference value of DVD B-Y DC Level (60Hz)
50	R-YDD6	-2	-16~+15	Difference value of DVD R-Y DC Level (60Hz)

Service Adjustments

No.	Item	Initial value	Range	Description
51	G-YA	00	00,01	G-Y Angle
52	RBGB	10	00~15	R-Y/B-Y Gain Balance
53	RBAG	08→09*	00~15	R-Y/B-Y Angle
54	G-YAN	00	00,01	Difference value of NTSC G-Y Angle
55	RBGBN	+4	-8~+7	Difference value of NTSC R-Y/B-Y Gain Balance
56	RBAGN	-2→0*	-8~+7	Difference value of NTSC R-Y/B-Y Angle
57	RBADP	+2	-8~+7	Difference value of DVD PAL R/B Angle
58	RBDN	-2→-5*	-8~+7	Difference value of DVD NTSC R/B Angle
59	RBBDP	+2	-8~+7	Difference value of DVD PAL R/B Balance
60	RBBDN	03→00*	00~15	Difference value of DVD NTSC R/B Balance
61	COGV	00→03*	00~03	Coring gain
62	BLKS	01→00*	00~03	BLK. STR. start (W/Defeat)
63	BLKG	00	00~03	BLK. STR. gain
64	BRTA	00	00, 01	BRT. ABL Defeat
65	BRST	00	00, 01	Mid. Stp. Defeat
66	BRTH	00	00~07	Bright. ABL. Threshold
67	WPL	00	00~03	WPL Ope. Point (W/Defeat)
68	YGAM	00	00~03	Y Gamma Start
69	PORW	00	00, 01	AV Mode Pre/Over SW
70	PORS	02	00~03	AV Mode Pre/Over-shoot adjustment
71	RFCO	0	-2~+1	Difference Value of RF Corring Gain
72	PORWN	01	00, 01	RF Pre/Over SW
73	PORSN	03	00~03	RF Pre/Over-shoot adjustment
74	TINT	+10	-16~+15	Tint
75	SHRF	00	-16~+15	Difference Value of RF Sharpness
76	SHRFD	00	-16~+15	Difference Value of DVD Sharpness
77	CODP	-10	-16~+15	Difference Value of DVD PAL colour
78	CODN	0	-16~+15	Difference Value of DVD NTSC colour
79	RFCOL	-7	-16~+15	Difference Value of TV colour
80	TIDN	+8	-16~+15	Difference Value of DVD NTSC tint
81	SHRFS	00	-16~+15	Difference Value of S-terminal Sharpness
82	TISN	00	-16~+15	Difference Value of S-terminal NTSC tint
83	COSPN	00	-16~+15	Difference Value of S-terminal colour PAL-N
84	COSPM	00	-16~+15	Difference Value of S-terminal colour PAL-M
85	COSN	00	-16~+15	Difference Value of S-terminal colour NTSC
86	ZOMCOL	-6	-16~+15	Difference Value of Colour (Zoom)
87	ZOMCON	-6→-8*	-16~+15	Difference Value of Contrast (Zoom)
88	ZOMBRI	-6	-16~+15	Difference Value of Brightness (Zoom)
89	TEXC	+8	-64~+63	OSD TEXT Contrast
90	AUFL	00	00~01	Auto. Flesh
91	COOP	07	00~07	Colour Killer option
92	Y-APF	01	00, 01	Y-APF Select
93	DEEM	00	00, 01	De-emphasis TC
94	V-LVL	04	00~07	Video Level
95	FMLVL	16	00~1F	FM Level
96	TTEST	00	00~07	Trap Test
97	IFOM-S	00	00, 01	Over Modulation SW
98	IFMN-S	00	00, 01	Audio Monitor SW, Monitor or FM
99	IFTRPS	00	00, 01	IC Built-in SIF Trap ON/OFF
100	IFMLVL	136	00~255	Video Level Coarse Adjustment & Modulation Operating Dot Setting
101	VBSW	00	00, 01	VBLK SW
102	FBTS	00	00, 01	FBP Blanking SW
103	HBLKL	05	00~07	H-Blanking Control Left
104	HBLKR	03	00~07	H-Blanking Control Right
105	AFCRF	00	00, 01	Adjustment of AFC Gain & Gate (RF)

Service Adjustments

No.	Item	Initial value	Range	Description
106	VSURF	00	00, 01	Adjustment of Vertical Sync. Separation Sensitivity (RF)
107	CDMRF	00	00~07	Vertical Count Down Loop Adjustment (RF)
108	AFCAV	01	00, 01	Adjustment of AFC Gain & Gate (AV)
109	VSUAV	00	00, 01	Adjustment of Vertical Sync. Separation Sensitivity (AV)
110	CDMAV	00	00~07	Vertical Count Down Loop Adjustment (AV)
111	HLK-T	00	00, 01	H-lock, V-det. (under RF mode)
112	HLK-V	00	00, 01	H-lock, V-Det. (under AV mode)
113	VCO-SW	00	00, 01	C. VCO Adjustment SW
114	VCOADJ	03	00~03	C. VCO Adjustment
115	GRAY	00	00, 01	Gray Mode
116	CROSS	00	00~03	Cross Black/White
117	HL-SW	01	00, 01	Half Tone ON/OFF
118	HL-TON	00	00~03	Half Tone Level
119	AVNCON	64	00~127	Contrast (No Signal in AV mode)
120	AVNBRI	64	00~127	Brightness (No Signal in AV mode)
121	POMT	05→12*	00~255	Power Mute Time
122	CHMT	05	00~255	Channel Mute Time
123	SYST	03	00~255	System-N
124	RELAY	80	00~255	Power Relay Time
125	CCD	20→30*	1~31	Horizontal Position of Closed captioning
126	V-POSZ	00	-32~+31	V-position (Zoom)
127	EWDCZ	+1	-32~+31	EW DC Zoom
128	EWTLZ	00	-32~+31	EW Tilt Zoom
129	EWCTPZ	+1→+5*	-8~+7	EW corner top Zoom
130	EWCBz	-1	-8~+7	EW corner bottom Zoom
131	VSCPZ	00	–4~+3	V-size Comp. Zoom
132	HSCPZ	00	–4~+3	H-size Comp. Zoom
133	AVTVTM	10	0~255	AV/TV mute time
134	FM-G	00	00~01	FM Gain
300	R00	FF	00~FF	ROM CORRECTION
301	R01	FF	00~FF	ROM CORRECTION
302	R02	FF	00~FF	ROM CORRECTION
303	R03	FF	00~FF	ROM CORRECTION
304	R04	FF	00~FF	ROM CORRECTION
305	R05	FF	00~FF	ROM CORRECTION
306	R06	FF	00~FF	ROM CORRECTION
307	R07	FF	00~FF	ROM CORRECTION
308	R08	FF	00~FF	ROM CORRECTION
309	R09	FF	00~FF	ROM CORRECTION
310	R10	FF	00~FF	ROM CORRECTION
311	R11	FF	00~FF	ROM CORRECTION
312	R12	FF	00~FF	ROM CORRECTION
313	R13	FF	00~FF	ROM CORRECTION
314	R14	FF	00~FF	ROM CORRECTION
315	R15	FF	00~FF	ROM CORRECTION
316	R16	FF	00~FF	ROM CORRECTION
317	R17	FF	00~FF	ROM CORRECTION
318	R18	FF	00~FF	ROM CORRECTION
319	R19	FF	00~FF	ROM CORRECTION
320	R20	FF	00~FF	ROM CORRECTION
321	R21	FF	00~FF	ROM CORRECTION
322	R22	FF	00~FF	ROM CORRECTION
323	R23	FF	00~FF	ROM CORRECTION
324	R24	FF	00~FF	ROM CORRECTION
325	R25	FF	00~FF	ROM CORRECTION

No.	Item	Initial value	Range	Description
326	R26	FF	00~FF	ROM CORRECTION
327	R27	FF	00~FF	ROM CORRECTION
328	R28	FF	00~FF	ROM CORRECTION
329	R29	FF	00~FF	ROM CORRECTION
330	R30	FF	00~FF	ROM CORRECTION
331	R31	FF	00~FF	ROM CORRECTION
332	R32	FF	00~FF	ROM CORRECTION
333	R33	FF	00~FF	ROM CORRECTION
334	R34	FF	00~FF	ROM CORRECTION
335	R35	FF	00~FF	ROM CORRECTION
336	R36	FF	00~FF	ROM CORRECTION
337	R37	FF	00~FF	ROM CORRECTION
338	R38	FF	00~FF	ROM CORRECTION
339	R39	FF	00~FF	ROM CORRECTION
340	R40	FF	00~FF	ROM CORRECTION
341	R41	FF	00~FF	ROM CORRECTION
342	R42	FF	00~FF	ROM CORRECTION
343	R43	FF	00~FF	ROM CORRECTION
344	R44	FF	00~FF	ROM CORRECTION
345	R45	FF	00~FF	ROM CORRECTION
346	R46	FF	00~FF	ROM CORRECTION
347	R47	FF	00~FF	ROM CORRECTION
348	R48	FF	00~FF	ROM CORRECTION
349	R49	FF	00~FF	ROM CORRECTION
350	R50	FF	00~FF	ROM CORRECTION
351	R51	FF	00~FF	ROM CORRECTION
352	R52	FF	00~FF	ROM CORRECTION
353	R53	FF	00~FF	ROM CORRECTION
354	R54	FF	00~FF	ROM CORRECTION
355	R55	FF	00~FF	ROM CORRECTION
356	R56	FF	00~FF	ROM CORRECTION
357	R57	FF	00~FF	ROM CORRECTION
358	R58	FF	00~FF	ROM CORRECTION
359	R59	FF	00~FF	ROM CORRECTION
360	R60	FF	00~FF	ROM CORRECTION
361	R61	FF	00~FF	ROM CORRECTION
362	R62	FF	00~FF	ROM CORRECTION
363	R63	FF	00~FF	ROM CORRECTION
364	R64	FF	00~FF	ROM CORRECTION
365	R65	FF	00~FF	ROM CORRECTION
366	R66	FF	00~FF	ROM CORRECTION
367	R67	FF	00~FF	ROM CORRECTION
368	R68	FF	00~FF	ROM CORRECTION
369	R69	FF	00~FF	ROM CORRECTION
370	R70	FF	00~FF	ROM CORRECTION
371	R71	FF	00~FF	ROM CORRECTION
372	R72	FF	00~FF	ROM CORRECTION CHECK DATA

Service Adjustments

Important Notice:
Do not attempt to adjust service adjustments not listed on below otherwise it may cause loss of performance and for correct operation.

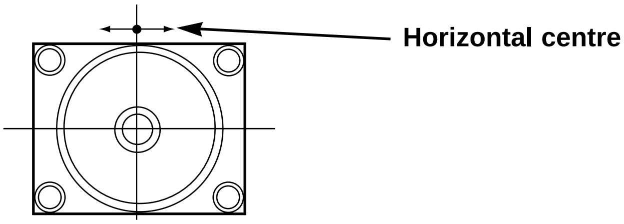
Item 01 [RFAGC] AGC

NOTE: Do not attempt this adjustment with weak signal.

1. Tune the receiver to most clearest (or strongest) VHF station in your area. Set the brightness and contrast controls to maximum. Set the colour control to minimum.
2. Select Item No. 01 [RFAGC] in the service mode.
3. Change value until the snow noise just disappears.
4. Exit from the service mode.

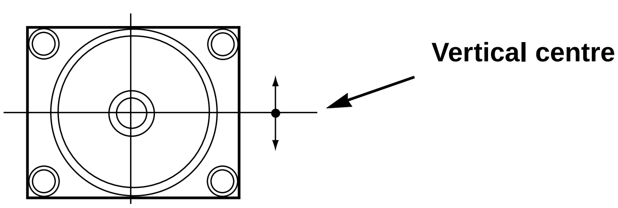
Item 02 [H-PHA] HORIZONTAL CENTRE

1. Receive a monochrome circular pattern.
2. Set the brightness and contrast to normal.
3. Select Item No. 02 [H-PHA] in the service mode.
4. Change value to be optimum horizontal centre position.
5. Exit from the service mode.



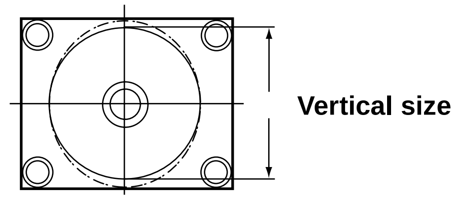
Item 03 [V-POS] VERTICAL CENTRE

1. Receive a monochrome circular pattern.
2. Set the brightness and contrast to maximum.
3. Select Item No. 03 [V-POS] in the service mode.
4. Change value to be optimum vertical centre position.
5. Exit from the service mode.



Item 04 [V-SIZ] VERTICAL SIZE

1. Receive a monochrome circular pattern.
2. Set the brightness to normal and contrast to maximum.
3. Select Item No. 04 [V-SIZ] in the service mode.
4. Change value to be optimum vertical size.
5. Exit from the service mode.

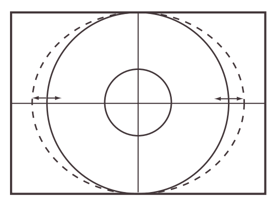


Item 17 [OSDHP] OSD H-POSITION

1. Receive a monochrome circular pattern.
2. Set the brightness and contrast to normal.
3. Select Item No. 17 [OSDHP] in the service mode.
4. Change value to be proper OSD horizontal position.
5. Exit from the service mode.

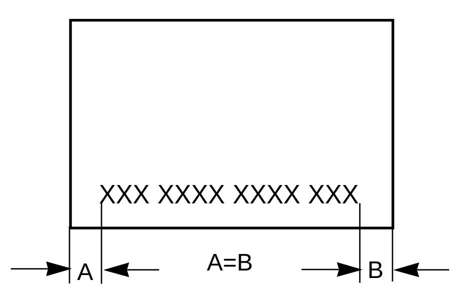
Item 19 [EWDC] HORIZONTAL WIDTH

1. Receive a monochrome circular pattern.
2. Set the brightness and contrast to maximum.
3. Select Item No.19 [EWDC] in the service mode.
4. Change value to be proper horizontal width.
5. Exit from the service mode.



Item 125 [CCD] CAPTION H-POSITION

1. Tune receiver to a caption channel.
2. Check that CAPTION position is in the horizontal center of the screen. If CAPTION center is too right or left, perform steps 3-6. (See figure below.)
3. Select Item No. 125 [CCD] in the service mode.
4. Adjust data with + or - key for proper horizontal center.
5. Exit from the service mode.



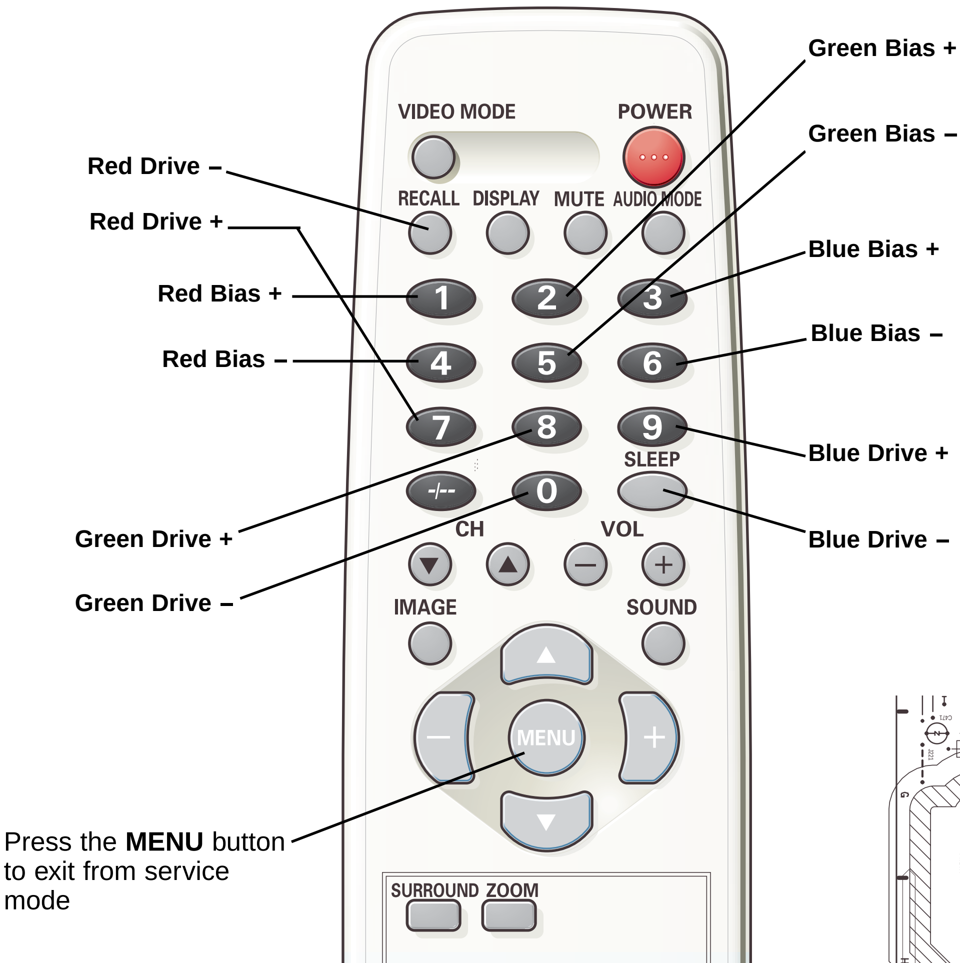
Caption H-position Adj.

Service Adjustments

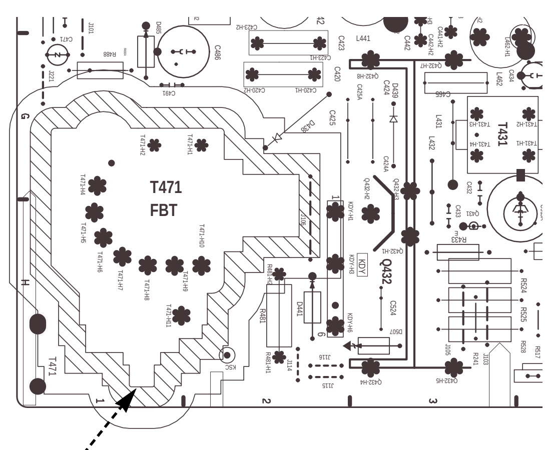
Items 35-42 GREY SCALE

1. Receive a monochrome circular pattern.
2. Set the brightness and colour to normal, contrast to maximum.
3. Enter to the service mode.
4. Set each value of Item-**35 RBIAS**, **36 GBIAS**, **37 BBIAS** mode to 00. Set each value of Item-**38 RDRIV**, **40 BDRIV** mode to 64, **39 GDRIV** to 08.
5. Select Item-**41** mode to be one horizontal scanning line and turn the screen volume on the FBT to obtain just visible one coloured line.
6. Press the **1 (Red Bias +)**, **4 (Red Bias –)**, **2 (Green Bias +)**, **5 (Green Bias –)**, **3 (Blue Bias +)** or **6 (Blue Bias –) button** to adjust the brightness of each colour until a dim white line produced. Please see the control button allocations in this mode.
7. Select Item-**42 DRV** mode to enter the white balance adjusting mode.
8. Press the **7 (Red Drive +)**, **RECALL (Red Drive –)**, **8 (Green Drive +), 0 (Green Drive –), 9 (Blue Drive +)** or **SLEEP (Blue Drive –) button** alternately to produce normal black and white picture.
9. Exit from the service mode.
10. Check for proper grey scale tracking at all brightness levels.

NOTE: If the grey scale adjustment is made after picture tube replacement, check the high voltage.



MAIN BOARD



SCREEN VR
(Under side)

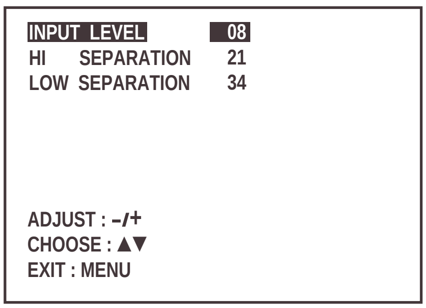
Service Adjustment-2 (MTS Adjustment)

Following table shows the initial values of MTS Adjustment which have been stored in the CPU ROM.

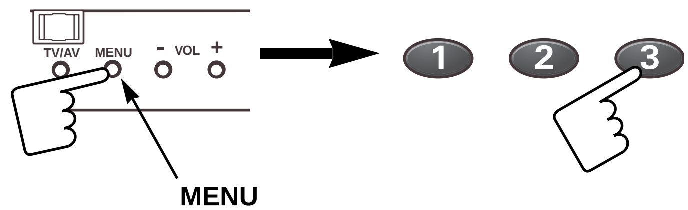
No.	Item	Initial value	Range
01	INPUT LEVEL	08	00~63
02	HIGH SEPARATION	21	00~63
03	LOW SEPARATION	34	00~63

1. Enter the Service Menu

While pressing the **MENU** button on the television, press the Number Key **3** on the remote control unit. The Service Menu now appear.



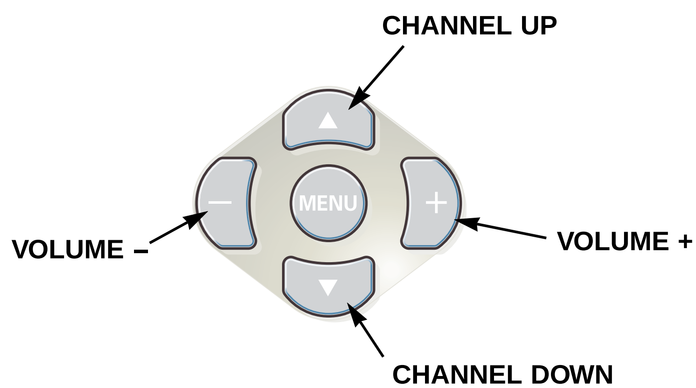
[MTS Adjustment Mode]



[Entering the Service Menu]

2. Service Adjustments:

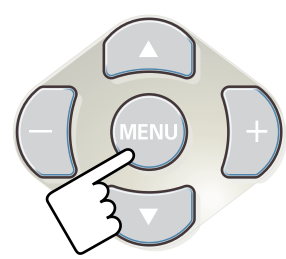
Press the **CHANNEL UP**/**DOWN** button on the remote control handset to select the desired service menu item you want to adjust.
Use the **VOLUME +** / **–** button to adjust the data. The **+** or **–** button will increase or decrease the data sequentially.



[Service Adjustment]

3. Exit from the Service Menu

Press the **MENU** button to turn off the Service Menu display.
The data which is set in the service mode is stored into the memory IC automatically.



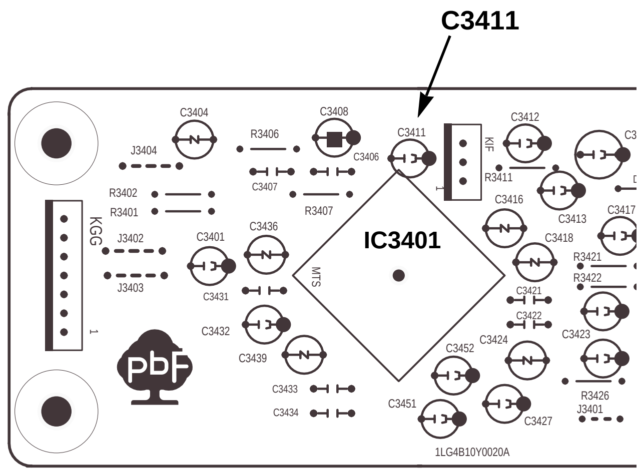
[Exit from the Service Menu]

SOUND LEVEL ADJUSTMENT

1. Receive the channel with audio 1KHz 100% modulation signal.
2. Connect a DC Volt-Meter to **KFF pin-2** (pin-38 of IC3401) and the ground.
3. Set the Surround OFF. Press and hold the **MENU** button on the TV set, and press "**3**" button on the remote control transmitter to enter the service mode.

INPUT LEVEL	08
HI SEPARATION	21
LOW SEPARATION	34

ADJUST : –/+
CHOOSE : ▲▼
EXIT : MENU



MTS BOARD

5. Adjust voltage to become DC 400mVrms±20mVrms at **KFF pin-2** by pressing the **VOLUME** (**+/–**) button on the remote control or TV set.
6. To exit from the service mode, press the **MENU** button.

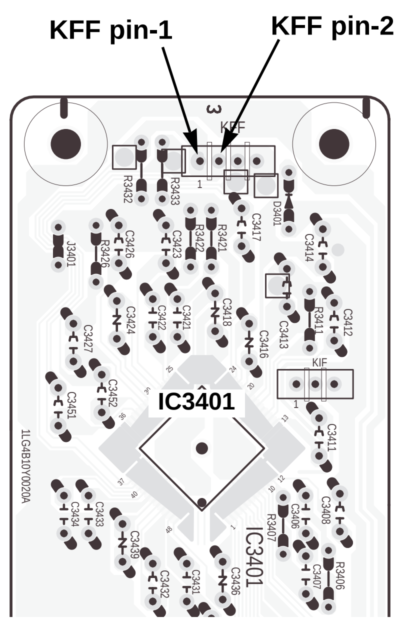
STEREO SEPARATION ADJUSTMENT

1. Connect an oscilloscope:
   Probe-A to **KFF Pin-2** (pin-38 of IC3401) and the ground.
   Probe-B to **KFF Pin-1** (pin-39 of IC3401) and the ground.

2. Turn on the TV set, and receive the multi sound programme. Set the Surround OFF.
3. Press and hold the **MENU** button on the TV set, and press "**3**" button on the remote control transmitter to enter the service mode.
4. Select "**LOW SEPARATION**" by pressing the CHANNEL UP/DOWN button on the remote control or TV set.

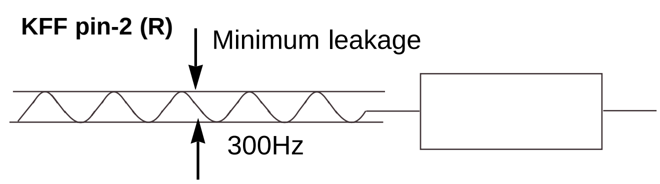
INPUT LEVEL	08
HI SEPARATION	21
LOW SEPARATION	34

ADJUST : –/+
CHOOSE : ▲▼
EXIT : MENU



MTS BOARD (Solder side)

5. Adjust the level of 300Hz at **KFF pin-2** (pin-38 of IC3401) to become minimum level by pressing the **VOLUME** (**+/–**) button on the remote control or TV set.



6. Select “HI SEPARATION” by pressing the **CHANNEL UP/DOWN** button on the remote control or TV set.

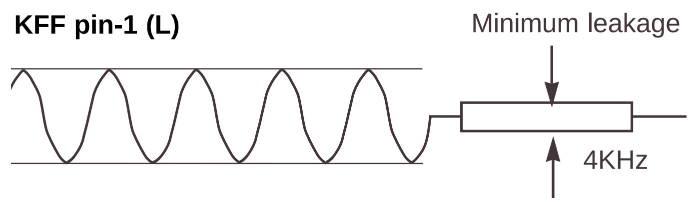
```
INPUT LEVEL        08
HI   SEPARATION    21
LOW  SEPARATION    34

ADJUST : –/+
CHOOSE : ▲▼
EXIT : MENU
```

7. Adjust the level of 4KHz at **KFF pin-1** (pin-39 of IC3401) to become minimum level by pressing the **VOLUME** (**+**/**–**) button on the remote control or TV set.

8. Repeat steps 4 to 7 for best separation.

9. To exit from the service mode, press the **MENU** button.



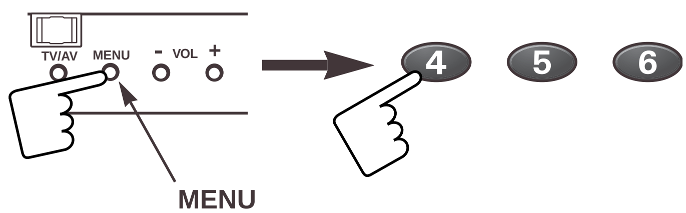
Service Adjustment-3

FINE TUNING

This adjustment is used to do a fine tuning of the channels with poor reception after they have been stored by the automatic tuning.
This function is available for one channel only and the fine-tuned channel is memorized into IC802 (EEPROM).

1. Enter the Service Menu

While pressing the **MENU** button on the television, press the “**4**” or **MENU** button on the remote control unit. The Service Menu now appear.



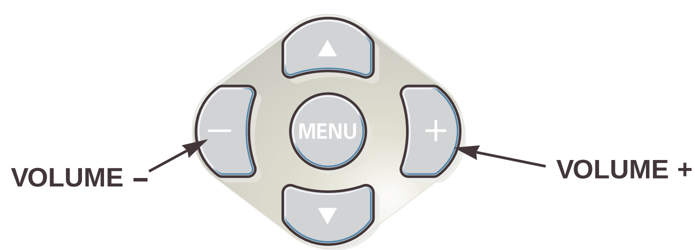
[Entering the Service Menu]

FINE TUNING	**–**	**+**

Fine tuning service mode

2. Service Adjustments:

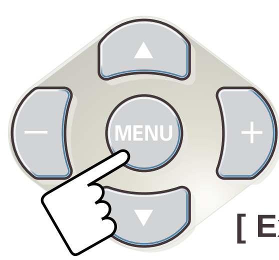
Press and hold the **VOLUME** (**+**/**–**) button on the remote control handset or TV set to make fine tuning adjustment. Press and hold the **+** button for higher frequency tuning, and press and hold the **–** for lower frequency tuning.



[Service Adjustment]

Fine tuning data value will be automatically stored in memory.

To return to normal TV mode, press the **MENU** button on the TV set or remote control handset. (Or will automatically return to normal TV mode after 5 seconds.)

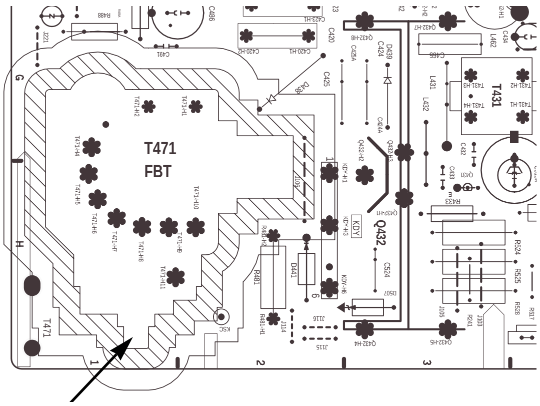


[Exit from the Service Menu]

Service Adjustment-4

FOCUS ADJUSTMENT

1. Receive the monochrome circular pattern.
2. Set the brightness to normal and contrast to maximum.
3. Adjust the focus control on the F.B.T. for the best focus on the screen centre.



FOCUS VR (Upper side)

HIGH VOLTAGE CHECK

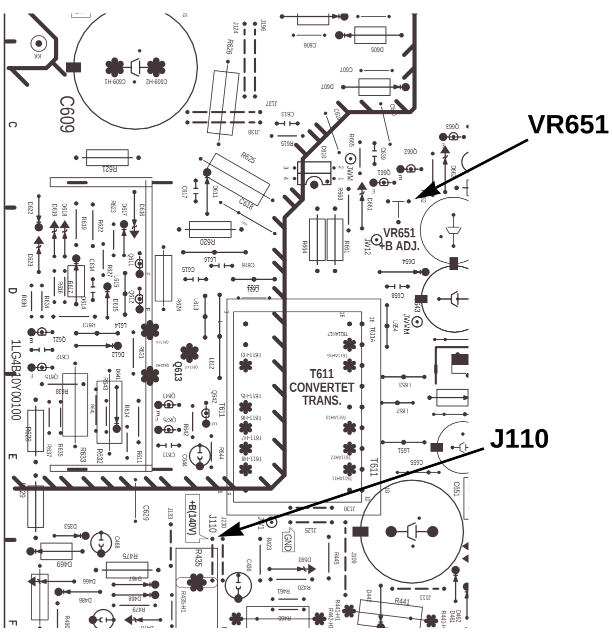
Note: *+B (+140V) Voltage and Grayscale Adjustment must be completed before attempting High Voltage Check.*

1. Connect high voltage voltmeter negative lead to ground, and connect + lead to anode of picture tube.
2. Tune receiver to an active channel and confirm TV is operating properly.
3. The high voltage must be 29.5KV ± 1.5KV and less than 32KV at 0 beam current (Brightness and contrast minimum setting).

Note: If the picture tube is replaced, check the high voltage.

+B POWER SUPPLY ADJUSTMENT

1. Connect a DC voltmetre to J110 and the ground. Set the +B adjustment control (VR651) to middle range.
2. Set the brightness to normal and contrast to maximum.
3. Tune the receiver to an active channel and synchronized picture.
4. Adjust +B voltage to 140± 1.0 volt DC by using VR651.



MAIN BOARD

Protection Circuit

This TV set has a built-in power supply protection circuit. It is provided to protect the TV set in case of a power supply circuit malfunctions. When something abnormality occurs during TV reception, the TV set goes to the stand-by mode.

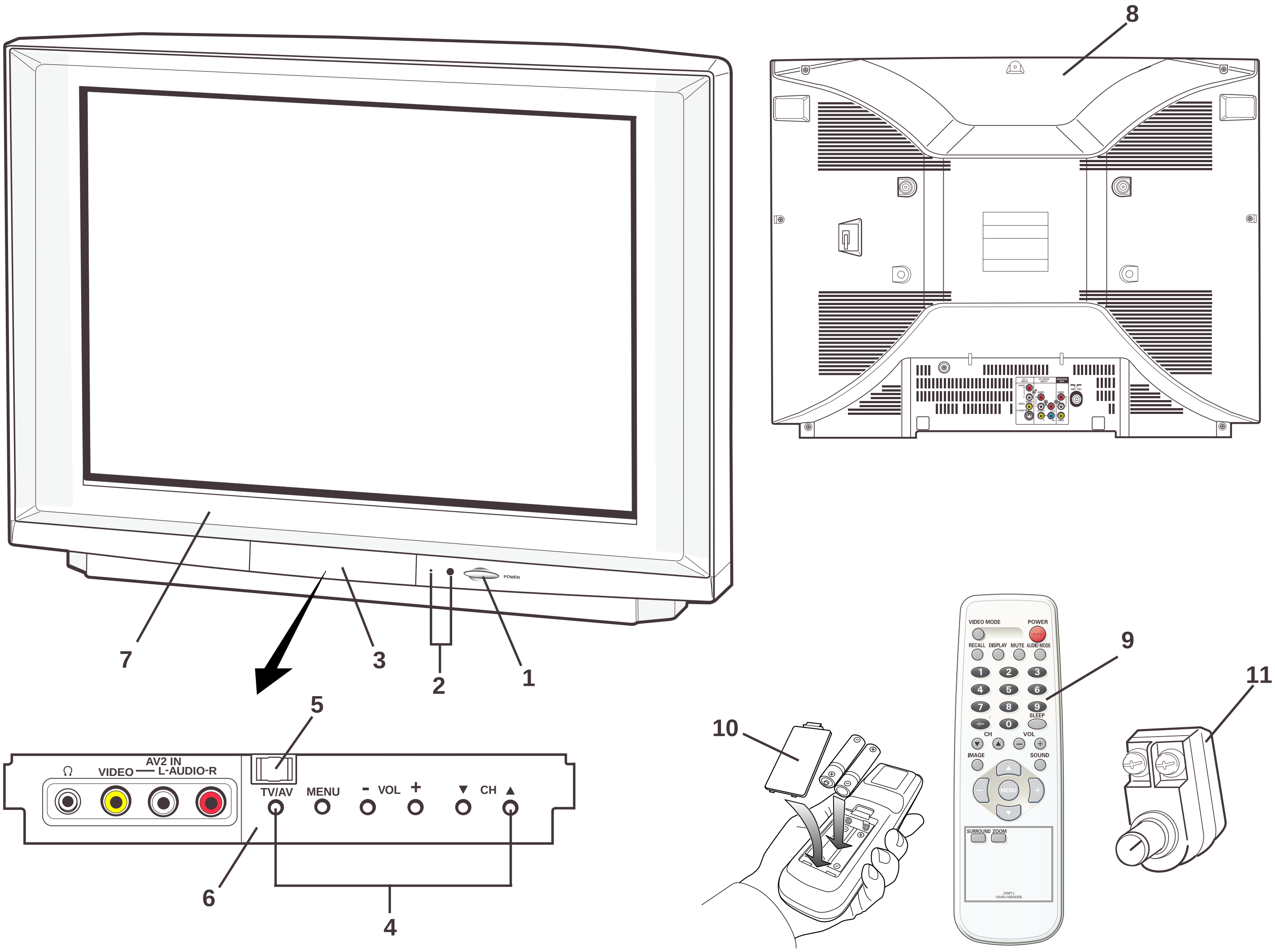
When an abnormality occurs during TV reception, it causes pin 27 of the CPU to go continually Low voltage for about one second. The CPU detects that this has occurred and outputs the signal from pin 31 to switch off the power supply lines.

Releasing the protective circuit and restoring power supply

To release the protective circuit and restore power supply, turn the power to the TV set OFF and then ON again via either the main power switch or the ON-OFF button on the remote control. This will work only if the power supply trouble was temporary. If there is permanent trouble such as a damaged circuit, power cannot be restored and the circuit will have to be repaired.

Cabinet Parts List

Note: Parts order must contain Service Ref. No., Part No., and descriptions.



Key No.	Part No.	Description
1	610 319 9320	ASSY,BUTTON POWER-C7SP
	610 210 7302	COIL SPRING-D8HA
2	610 319 2802	DEC IND-C7SA
3	610 319 2789	DOOR-C8AP
4	610 319 9016	BUTTON UNITED-C8AE
5	610 104 2505	LATCH PUSH,7.9X6.9BK
or	655 000 6936	LATCH PUSH,7.9X6.9BK
6	610 319 9603	DEC SHEET-C8AE
7	610 319 2734	CABINET FRONT-C8AP
8	610 319 2758	CABINET BACK-C8AA
9	645 072 9812	ASSY,REMOCON JXMTJ
10	610 297 9879	RC-BATTERY LID-JXMTA
11	645 004 3925	ANTENNA CONVERTER
	645 005 0251	ANTENNA CONVERTER
	610 319 5650	INSTRUCTION MANUAL-C8AP

Chassis Electrical Parts List

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by a ⚠ mark in this parts list and the circuit diagram show components whose value have special significance to product safety. It is particularly recommended that only parts specified on the following parts list be used for components replacement pointed out by the mark.

Note: Parts order must contain Service Ref. No., Part No., and descriptions. The main PCB unit will be supplied without tuner and flyback transformer. They should be ordered separately.

NOTES:

Read description in the Capacitor and Resistor as follows:

CAPACITOR

CERAMIC 100P K 50V

- 50V: Rated Voltage
- K: Tolerance Symbols:
  - Less than 10pF
    - A : Not specified B : ±0.1pF C : ±0.25pF
    - D : ±0.5pF F : ±1PF G : ±2pF
    - R : ±0.25-0pF S : ±0-0.25pF E : +0-1pF
  - More than 10pF
    - A : Not specified B : ±0.1% C : ±0.25%
    - D : ±0.5% F : ±1% G : ±2%
    - H : ±3% J : ±5% K : ±10%
    - L : ±15% M : ±20% N : ±30%
    - P : +100-0% Q : +30-10% T : +50-10%
    - U : +75-10% V : +20-10% W : +100-10%
    - X : +40-20% Y : +150-10% Z : +80-20%
- 100P: Rated value: P=pico farad, U=micro farad
- CERAMIC: Material:
  - CERAMIC........... Ceramic
  - MT-PAPER......... Metallized Paper
  - POLYESTER...... Polyester
  - MT-POLYEST..... Metallized Polyester
  - POLYPRO.......... Polypropylene
  - MT-POLYPRO.... Metallized Polypropylene
  - COMPO FILM..... Composite film
  - MT-COMPO........ Metallized Composite
  - STYRENE........... Styrene
  - TA-SOLID........... Tantalum Solid
  - AL-SOLID........... Aluminium Solid
  - ELECT................ Electrolytic
  - NP-ELECT.......... Non-polarised Electrolytic
  - OS-SOLID.......... Aluminium Solid with Organic Semiconductive Electrolytic
  - DL-ELECT.......... Double Layered Electrolytic

RESISTOR

CARBON 4.7K J A 1/4W

- 1/4W: Rated Wattage
- A: Performance Symbols:
  - A: General B: Non flammable Z: Low noise
  - Other: Temperature coefficient
- J: Tolerance Symbols:
  - A: ±0.05% B: ±0.1% C: ±0.25% D: ±0.5%
  - F: ±1% G: ±2% J: ±5% K: ±10%
  - M: ±20% P: +5-15%
- 4.7K: Rated value, ohms:
  - K: 1,000, M: 1,000,000
- CARBON: Material:
  - CARBON........... Carbon
  - MT-FILM............ Metal Film
  - OXIDE-MT......... Oxide Metal Film
  - SOLID................ Composition
  - MT-GLAZE......... Metal Glaze
  - WIRE WOUND... Wire Wound
  - CERAMIC RES.. Ceramic
  - FUSIBLE RES.... Fusible

OUT OF CIRCUIT BOARD

Ref. No.	Part No.	Description
⚠Q901	414 013 5301	CRT A68ELM021X003
COIL		
⚠L901	652 001 2530	COIL,DEGAUSSING
MISCELLANEOUS		
SP901	652 001 1311	SPEAKER,8
SP902	652 001 1311	SPEAKER,8
⚠W901	645 037 2490	CORD,POWER-2.4MK-A5102

655 000 8244 ASSY,PWB,MAIN C8AE 1LG0B10Y00100

Ref. No.	Part No.	Description
TRANSISTOR		
Q001	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q031	405 134 5925	TR 2SA1037AK-T146-R
	405 147 2215	TR 2SA1037AK-S-T146
	405 002 0318	TR 2SA1037K T146 R
	405 002 0417	TR 2SA1037K T146 S
	405 002 6726	TR 2SA1179-M6-TB
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1513	TR 2SA1179N-M6-TB
	405 163 2718	TR 2SA1179N-M7-TB
	405 173 9615	TR 2SA1235A1E
	405 173 9714	TR 2SA1235A1F
Q1001	405 134 5925	TR 2SA1037AK-T146-R
	405 147 2215	TR 2SA1037AK-S-T146
	405 002 0318	TR 2SA1037K T146 R
	405 002 0417	TR 2SA1037K T146 S
	405 002 6726	TR 2SA1179-M6-TB
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1513	TR 2SA1179N-M6-TB
	405 163 2718	TR 2SA1179N-M7-TB
	405 173 9615	TR 2SA1235A1E
	405 173 9714	TR 2SA1235A1F
Q1002	405 134 5925	TR 2SA1037AK-T146-R
	405 147 2215	TR 2SA1037AK-S-T146
	405 002 0318	TR 2SA1037K T146 R
	405 002 0417	TR 2SA1037K T146 S
	405 002 6726	TR 2SA1179-M6-TB
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1513	TR 2SA1179N-M6-TB
	405 163 2718	TR 2SA1179N-M7-TB
	405 173 9615	TR 2SA1235A1E
	405 173 9714	TR 2SA1235A1F
Q1003	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S

Ref. No.	Part No.	Description
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q1004	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q1006	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q1007	405 134 5925	TR 2SA1037AK-T146-R
	405 147 2215	TR 2SA1037AK-S-T146
	405 002 0318	TR 2SA1037K T146 R
	405 002 0417	TR 2SA1037K T146 S
	405 002 6726	TR 2SA1179-M6-TB
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1513	TR 2SA1179N-M6-TB
	405 163 2718	TR 2SA1179N-M7-TB
	405 173 9615	TR 2SA1235A1E
	405 173 9714	TR 2SA1235A1F
Q106	405 015 9721	TR 2SC2814-F4-TB
Q171	405 134 5925	TR 2SA1037AK-T146-R
	405 147 2215	TR 2SA1037AK-S-T146
	405 002 0318	TR 2SA1037K T146 R
	405 002 0417	TR 2SA1037K T146 S
	405 002 6726	TR 2SA1179-M6-TB
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1513	TR 2SA1179N-M6-TB
	405 163 2718	TR 2SA1179N-M7-TB
	405 173 9615	TR 2SA1235A1E
	405 173 9714	TR 2SA1235A1F
Q182	405 134 5925	TR 2SA1037AK-T146-R
	405 147 2215	TR 2SA1037AK-S-T146
	405 002 0318	TR 2SA1037K T146 R
	405 002 0417	TR 2SA1037K T146 S
	405 002 6726	TR 2SA1179-M6-TB
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1513	TR 2SA1179N-M6-TB
	405 163 2718	TR 2SA1179N-M7-TB
	405 173 9615	TR 2SA1235A1E
	405 173 9714	TR 2SA1235A1F
Q190	405 134 5925	TR 2SA1037AK-T146-R
	405 147 2215	TR 2SA1037AK-S-T146
	405 002 0318	TR 2SA1037K T146 R
	405 002 0417	TR 2SA1037K T146 S
	405 002 6726	TR 2SA1179-M6-TB
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1513	TR 2SA1179N-M6-TB
	405 163 2718	TR 2SA1179N-M7-TB
	405 173 9615	TR 2SA1235A1E
	405 173 9714	TR 2SA1235A1F
Q1902	405 001 7615	TR 2SA1015-Y(SAN)-TPE2
	405 004 3218	TR 2SA564A-R(CU)-TA
	405 151 3324	TR 2SA608NF-NPA-AT
	405 006 1816	TR 2SA933S-TP-R
	406 000 6804	TR 2SA1015-GR(SAN)
Q291	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q292	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q431	405 018 0517	TR 2SC3332-R-AA
	405 018 0616	TR 2SC3332-S-AA
Q432	405 157 1304	TR 2SD2634-YB
Q461	405 064 7307	TR 2SB1274-Q-RA
	405 064 7406	TR 2SB1274-R-RA
Q462	405 011 8411	TR 2SC1740S-TP-Q
	405 011 8510	TR 2SC1740S-TP-R
	405 011 8619	TR 2SC1740S-TP-S
	405 012 2012	TR 2SC1815-GR-TPE2
	405 012 2111	TR 2SC1815-O—TPE2
	405 012 2319	TR 2SC1815-Y-TPE2
	405 157 0515	TR 2SC536NF-NPA-AT
	405 151 8725	TR 2SC536NG-NPA-AT
	405 020 7511	TR 2SC945A-PA-T
	405 020 7719	TR 2SC945A-QA-T
	405 020 7917	TR 2SC945A-RA-T
Q527	405 011 8411	TR 2SC1740S-TP-Q
	405 011 8510	TR 2SC1740S-TP-R
	405 011 8619	TR 2SC1740S-TP-S
	405 012 2012	TR 2SC1815-GR-TPE2
	405 012 2111	TR 2SC1815-O—TPE2
	405 012 2319	TR 2SC1815-Y-TPE2
	405 157 0515	TR 2SC536NF-NPA-AT
	405 151 8725	TR 2SC536NG-NPA-AT
	405 020 7511	TR 2SC945A-PA-T
	405 020 7719	TR 2SC945A-QA-T
	405 020 7917	TR 2SC945A-RA-T
Q591	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q611	405 013 6811	TR 2SC2274-E-AA
	405 013 7016	TR 2SC2274-F-AA
Q612	405 006 6514	TR 2SA984-E-AA
	405 006 6712	TR 2SA984-F-AA
Q613	405 172 6803	TR 2SK3102
Q615	405 011 8411	TR 2SC1740S-TP-Q
	405 011 8510	TR 2SC1740S-TP-R
	405 011 8619	TR 2SC1740S-TP-S
	405 012 2012	TR 2SC1815-GR-TPE2
	405 012 2319	TR 2SC1815-Y-TPE2
	405 157 0515	TR 2SC536NF-NPA-AT
	405 151 8725	TR 2SC536NG-NPA-AT
	405 020 7511	TR 2SC945A-PA-T
	405 020 7719	TR 2SC945A-QA-T
Q621	405 011 8411	TR 2SC1740S-TP-Q

Ref. No.	Part No.	Description
	405 011 8510	TR 2SC1740S-TP-R
	405 011 8619	TR 2SC1740S-TP-S
	405 012 2012	TR 2SC1815-GR-TPE2
	405 012 2319	TR 2SC1815-Y-TPE2
	405 157 0515	TR 2SC536NF-NPA-AT
	405 151 8725	TR 2SC536NG-NPA-AT
	405 020 7511	TR 2SC945A-PA-T
	405 020 7719	TR 2SC945A-QA-T
Q625	405 016 9413	TR 2SC3068-AA
Q641	405 001 7615	TR 2SA1015-Y(SAN)-TPE2
	405 004 3218	TR 2SA564A-R(CU)-TA
	405 151 3324	TR 2SA608NF-NPA-AT
	405 006 1816	TR 2SA933S-TP-R
	406 000 6804	TR 2SA1015-GR(SAN)
Q642	405 011 8411	TR 2SC1740S-TP-Q
	405 011 8510	TR 2SC1740S-TP-R
	405 011 8619	TR 2SC1740S-TP-S
	405 012 2012	TR 2SC1815-GR-TPE2
	405 012 2319	TR 2SC1815-Y-TPE2
	405 157 0515	TR 2SC536NF-NPA-AT
	405 151 8725	TR 2SC536NG-NPA-AT
	405 020 7511	TR 2SC945A-PA-T
	405 020 7719	TR 2SC945A-QA-T
Q652	405 089 0010	TR 2SA1707-S-AN
	405 089 0119	TR 2SA1707-T-AN
	405 009 6917	TR 2SB985-S-AE
	405 009 7013	TR 2SB985-T-AE
Q653	405 089 0010	TR 2SA1707-S-AN
	405 089 0119	TR 2SA1707-T-AN
	405 009 6917	TR 2SB985-S-AE
	405 009 7013	TR 2SB985-T-AE
Q654	405 059 9804	TR 2SD1913-Q-RA
	405 059 9903	TR 2SD1913-R-RA
Q661	405 011 8411	TR 2SC1740S-TP-Q
	405 011 8510	TR 2SC1740S-TP-R
	405 011 8619	TR 2SC1740S-TP-S
	405 012 2012	TR 2SC1815-GR-TPE2
	405 012 2319	TR 2SC1815-Y-TPE2
	405 157 0515	TR 2SC536NF-NPA-AT
	405 151 8725	TR 2SC536NG-NPA-AT
	405 020 7511	TR 2SC945A-PA-T
	405 020 7719	TR 2SC945A-QA-T
Q662	405 001 7615	TR 2SA1015-Y(SAN)-TPE2
	405 004 3218	TR 2SA564A-R(CU)-TA
	405 151 3324	TR 2SA608NF-NPA-AT
	405 006 1816	TR 2SA933S-TP-R
	406 000 6804	TR 2SA1015-GR(SAN)
Q663	405 011 8411	TR 2SC1740S-TP-Q
	405 011 8510	TR 2SC1740S-TP-R
	405 011 8619	TR 2SC1740S-TP-S
	405 012 2012	TR 2SC1815-GR-TPE2
	405 012 2319	TR 2SC1815-Y-TPE2
	405 157 0515	TR 2SC536NF-NPA-AT
	405 151 8725	TR 2SC536NG-NPA-AT
	405 020 7511	TR 2SC945A-PA-T
	405 020 7719	TR 2SC945A-QA-T
Q670	405 001 7417	TR 2SA1015OSAN
	405 001 7615	TR 2SA1015-Y(SAN)-TPE2
	405 004 3119	TR 2SA564A-Q(CU)-TA
	405 004 3218	TR 2SA564A-R(CU)-TA
	405 151 3324	TR 2SA608NF-NPA-AT
	405 006 1717	TR 2SA933S-TP-Q
	405 006 1816	TR 2SA933S-TP-R
	406 000 6804	TR 2SA1015-GR(SAN)
Q671	405 011 8411	TR 2SC1740S-TP-Q
	405 011 8510	TR 2SC1740S-TP-R
	405 011 8619	TR 2SC1740S-TP-S

Ref. No.	Part No.	Description
	405 012 2012	TR 2SC1815-GR-TPE2
	405 012 2111	TR 2SC1815-O—TPE2
	405 012 2319	TR 2SC1815-Y-TPE2
	405 157 0515	TR 2SC536NF-NPA-AT
	405 151 8725	TR 2SC536NG-NPA-AT
	405 020 7511	TR 2SC945A-PA-T
	405 020 7719	TR 2SC945A-QA-T
	405 020 7917	TR 2SC945A-RA-T
Q681	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q691	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q7904	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q7905	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q7906	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q7907	405 134 5925	TR 2SA1037AK-T146-R
	405 147 2215	TR 2SA1037AK-S-T146
	405 002 0318	TR 2SA1037K T146 R
	405 002 0417	TR 2SA1037K T146 S
	405 002 6726	TR 2SA1179-M6-TB
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1513	TR 2SA1179N-M6-TB
	405 163 2718	TR 2SA1179N-M7-TB
	405 173 9615	TR 2SA1235A1E
	405 173 9714	TR 2SA1235A1F
Q7908	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q7909	405 014 4519	TR 2SC2412K T146 R

Ref. No.	Part No.	Description
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q861	405 134 5925	TR 2SA1037AK-T146-R
	405 147 2215	TR 2SA1037AK-S-T146
	405 002 0318	TR 2SA1037K T146 R
	405 002 0417	TR 2SA1037K T146 S
	405 002 6726	TR 2SA1179-M6-TB
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1513	TR 2SA1179N-M6-TB
	405 163 2718	TR 2SA1179N-M7-TB
	405 173 9615	TR 2SA1235A1E
	405 173 9714	TR 2SA1235A1F
Q871	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q881	405 014 4519	TR 2SC2412K T146 R
	405 014 4618	TR 2SC2412K T146 S
	405 015 8724	TR 2SC2812-L6-TB
	405 015 8922	TR 2SC2812-L7-TB
	405 163 1612	TR 2SC2812N-L6-TB0
	405 163 1711	TR 2SC2812N-L7-TB0
	405 173 9813	TR 2SC3928A1R
	405 173 9912	TR 2SC3928A1S
Q886	405 011 8411	TR 2SC1740S-TP-Q
	405 011 8510	TR 2SC1740S-TP-R
	405 011 8619	TR 2SC1740S-TP-S
	405 012 2012	TR 2SC1815-GR-TPE2
	405 012 2319	TR 2SC1815-Y-TPE2
	405 157 0515	TR 2SC536NF-NPA-AT
	405 151 8725	TR 2SC536NG-NPA-AT
	405 020 7511	TR 2SC945A-PA-T
	405 020 7719	TR 2SC945A-QA-T
INTEGRATED CIRCUIT		
IC001	409 017 7505	IC LA4270-E
IC1001	409 419 5406	IC MM1313BD
IC201	409 502 7805	IC LA76828
IC202	409 124 5302	IC L78M05T
IC203	409 124 5302	IC L78M05T
IC501	409 453 5905	IC LA78041-E
IC681	409 241 5407	IC BA178M05T
IC801	410 553 5306	IC LC863440C-55R0-TLM-E
IC802	409 343 6302	IC 24LC04B/P
	409 495 7004	IC CAT24WC04P
	409 470 3403	IC KS24C041C
	409 427 4705	IC M24C04-BN6
	410 499 0908	IC AT24C04-10PI-2.7
CAPACITOR		
C003	403 215 2439	CERAMIC 0.015U K 50V
C004	403 215 2439	CERAMIC 0.015U K 50V
C005	404 084 8806	ELECT 1U M 50V
C006	404 084 8806	ELECT 1U M 50V
C007	404 084 7809	ELECT 100U M 16V
C008	404 084 7809	ELECT 100U M 16V
C009	404 084 8004	ELECT 220U M 16V
C010	404 084 9209	ELECT 4.7U M 50V

Ref. No.	Part No.	Description
C011	403 274 9718	POLYESTER 0.22U K 50V
C012	403 274 9718	POLYESTER 0.22U K 50V
C013	404 084 8400	ELECT 1000U M 25V
C014	404 084 8400	ELECT 1000U M 25V
C017	403 154 8520	ELECT 3300U M 35V
	404 102 9501	ELECT 3300U M 35V
C018	403 274 9718	POLYESTER 0.22U K 50V
C019	403 274 9718	POLYESTER 0.22U K 50V
C033	404 084 8806	ELECT 1U M 50V
C035	404 084 7908	ELECT 1000U M 16V
C1001	404 087 1606	ELECT 0.1U M 50V
C1002	404 084 9001	ELECT 2.2U M 50V
C1003	404 087 1606	ELECT 0.1U M 50V
C1004	404 084 9001	ELECT 2.2U M 50V
C1005	403 215 2231	CERAMIC 0.01U K 50V
C1006	404 087 1606	ELECT 0.1U M 50V
C1007	404 084 9001	ELECT 2.2U M 50V
C1009	404 084 9001	ELECT 2.2U M 50V
C101	403 044 1743	ELECT 470U M 16V
C1012	404 087 1606	ELECT 0.1U M 50V
C1013	404 084 9001	ELECT 2.2U M 50V
C1014	404 084 9001	ELECT 2.2U M 50V
C1016	404 084 8202	ELECT 47U M 16V
C1017	403 215 2231	CERAMIC 0.01U K 50V
C1018	404 084 9001	ELECT 2.2U M 50V
C1019	404 084 9001	ELECT 2.2U M 50V
C1021	404 084 7700	ELECT 10U M 16V
C1022	404 084 7700	ELECT 10U M 16V
C1025	404 089 6401	NP-ELECT 4.7U M 50V
C1027	404 087 1606	ELECT 0.1U M 50V
C1028	404 088 7300	ELECT 22U M 16V
C103	404 093 9702	ELECT 33U M 50V
C1030	404 089 6401	NP-ELECT 4.7U M 50V
C107	404 084 9209	ELECT 4.7U M 50V
	404 081 0506	ELECT 4.7U M 50V
C1101	404 090 2102	NP-ELECT 10U M 16V
C1102	404 090 2102	NP-ELECT 10U M 16V
C113	403 149 9248	CERAMIC 0.01U Z 50V
C115	403 149 9248	CERAMIC 0.01U Z 50V
C121	403 149 9248	CERAMIC 0.01U Z 50V
C122	404 084 8202	ELECT 47U M 16V
C124	403 149 9248	CERAMIC 0.01U Z 50V
C138	403 284 4324	CERAMIC 0.022U K 50V
C1900	404 088 7300	ELECT 22U M 16V
C201	404 084 9803	NP-ELECT 1U M 50V
C202	403 058 2426	POLYESTER 0.015U J 50V
C203	403 149 9248	CERAMIC 0.01U Z 50V
C204	404 084 8905	ELECT 10U M 50V
C205	404 084 8905	ELECT 10U M 50V
C206	403 164 0234	CERAMIC 0.1U Z 25V
C207	403 164 0234	CERAMIC 0.1U Z 25V
C208	403 113 3835	CERAMIC 1000P K 50V
C209	404 084 8707	ELECT 0.47U M 50V
C210	404 084 8301	ELECT 470U M 16V
C212	403 155 4234	CERAMIC 15P J 50V
C221	403 305 3527	CERAMIC 0.1U Z 50V
C222	403 305 3527	CERAMIC 0.1U Z 50V
C223	403 305 3527	CERAMIC 0.1U Z 50V
C224	403 205 2838	CERAMIC 0.047U K 25V
C225	404 084 8707	ELECT 0.47U M 50V
C226	404 084 8707	ELECT 0.47U M 50V
C227	403 086 2617	NP-ELECT 1U M 50V
	404 084 9803	NP-ELECT 1U M 50V
C229	403 149 9248	CERAMIC 0.01U Z 50V
C230	403 149 9248	CERAMIC 0.01U Z 50V
C231	403 260 2944	MT-COMPO 0.33U J 50V
C232	403 260 2944	MT-COMPO 0.33U J 50V

Ref. No.	Part No.	Description
C233	404 084 8202	ELECT 47U M 16V
C243	403 149 9248	CERAMIC 0.01U Z 50V
C244	404 084 8301	ELECT 470U M 16V
C245	404 084 9803	NP-ELECT 1U M 50V
C246	404 084 8806	ELECT 1U M 50V
C247	404 084 9001	ELECT 2.2U M 50V
C248	404 084 8707	ELECT 0.47U M 50V
C249	404 084 8707	ELECT 0.47U M 50V
C251	403 149 9248	CERAMIC 0.01U Z 50V
C252	403 149 9248	CERAMIC 0.01U Z 50V
C253	403 070 8816	CERAMIC 1500P K 50V
C255	403 157 1934	CERAMIC 10P D 50V
C272	404 084 7908	ELECT 1000U M 16V
C273	403 164 0234	CERAMIC 0.1U Z 25V
C274	404 084 7908	ELECT 1000U M 16V
C358	404 084 8806	ELECT 1U M 50V
C360	403 075 9026	CERAMIC 150P K 500V
C3806	403 149 9248	CERAMIC 0.01U Z 50V
C420	404 077 4402	MT-POLYPRO 7200P H 1.5K
	404 088 0103	MT-POLYPRO 7200P J 1.6K
C423	404 080 6608	MT-POLYPRO 6800P H 1.5K
	404 087 9909	MT-POLYPRO 6800P J 1.6K
C424	403 083 3419	POLYPRO 0.015U J 400V
C425	403 083 4317	POLYPRO 0.022U J 400V
C432	403 075 7131	CERAMIC 1000P K 500V
C433	403 076 3142	CERAMIC 3900P K 500V
C434	404 087 6007	ELECT 47U M 35V
C436	404 087 6205	ELECT 0.47U M 160V
C437	403 066 6126	MT-POLYEST 0.47U J 250V
C441	404 083 7305	MT-POLYPRO 0.15U M 200V
C442	404 083 7305	MT-POLYPRO 0.15U M 200V
C465	403 066 0124	MT-POLYEST 2.2U K 100V
C468	404 087 5406	ELECT 22U M 50V
C469	404 084 8905	ELECT 10U M 50V
C470	403 069 8325	CERAMIC 0.01U Z 50V
C471	404 102 5206	NP-ELECT 4.7U M 100V
C481	403 070 8410	CERAMIC 1500P K 50V
C486	403 260 0722	ELECT 33U M 250V
C491	403 076 5324	CERAMIC 680P K 500V
C501	404 084 8806	ELECT 1U M 50V
C514	404 084 8905	ELECT 10U M 50V
C515	404 088 6600	ELECT 2200U M 25V
C517	404 102 8207	ELECT 220U M 35V
C518	403 157 7233	CERAMIC 3900P K 50V
C519	403 071 1727	CERAMIC 180P K 50V
C520	403 188 0907	MT-POLYEST 0.22U K 100V
C521	404 088 6709	ELECT 1000U M 35V
	404 080 5809	ELECT 1000U M 35V
C522	403 188 0907	MT-POLYEST 0.22U K 100V
C524	403 288 9107	POLYESTER 0.22U K 100V
C527	404 084 8905	ELECT 10U M 50V
C530	404 084 9209	ELECT 4.7U M 50V
⚠ C601	404 073 7506	MT-POLYEST 0.068U M 275V
	404 072 7705	MT-POLYEST 0.068U M 250V
	404 079 6503	MT-POLYEST 0.068U M 250V
C608	403 076 6727	CERAMIC 1000P K 1K
	403 312 8225	CERAMIC 1000P K 1K
C609	404 051 8105	ELECT 270U M 400V
	404 078 7600	ELECT 270U M 400V
⚠ C610	404 073 5106	CERAMIC 470P K 250V
	404 073 3300	CERAMIC 470P M 250V
	404 071 4507	CERAMIC 470P K 400V
	404 087 0302	CERAMIC 470P M 400V
C611	403 179 2517	POLYESTER 0.022U J 50V
C612	403 072 4420	CERAMIC 270P K 50V
C613	403 181 8316	POLYESTER 0.1U J 50V
C614	403 270 3423	MT-POLYEST 0.22U K 63V
	403 237 7941	MT-COMPO 0.22U J 50V
C615	403 324 3314	CERAMIC 220P K 2K
C616	403 324 3314	CERAMIC 220P K 2K
C617	403 324 3314	CERAMIC 220P K 2K
C618	403 149 5101	MT-POLYEST 0.047U K 630V
	403 314 5113	MT-POLYEST 0.047U K 630V
C619	404 073 2303	CERAMIC 1500P M 250V
	404 071 3708	CERAMIC 1500P M 400V
	404 097 3805	CERAMIC 1.5K P M 400V
C620	404 073 5106	CERAMIC 470P K 250V
	404 073 3300	CERAMIC 470P M 250V
	404 071 4507	CERAMIC 470P K 400V
	404 087 0302	CERAMIC 470P M 400V
C621	403 076 6727	CERAMIC 1000P K 1K
	403 312 8225	CERAMIC 1000P K 1K
C622	403 113 3835	CERAMIC 1000P K 50V
C623	403 056 7334	POLYESTER 1000P J 50V
	403 178 9210	POLYESTER 1000P J 50V
C624	403 113 3835	CERAMIC 1000P K 50V
⚠ C629	404 073 5106	CERAMIC 470P K 250V
	404 073 3300	CERAMIC 470P M 250V
	404 071 4507	CERAMIC 470P K 400V
	404 087 0302	CERAMIC 470P M 400V
C643	403 148 0741	ELECT 2200U M 25V
	404 087 2405	ELECT 2200U M 25V
C644	404 087 4904	ELECT 47U M 25V
C651	404 044 0703	ELECT 470U M 160V
C652	403 119 8111	ELECT 1000U M 35V
C654	403 355 3304	ELECT 2200U M 35V
C655	403 245 4414	CERAMIC 470P K 2K
	403 232 1835	CERAMIC 470P K 2K
C663	404 084 8806	ELECT 1U M 50V
C664	404 084 7700	ELECT 10U M 16V
C665	404 084 8301	ELECT 470U M 16V
C670	403 305 3527	CERAMIC 0.1U Z 50V
C681	404 087 4409	ELECT 2200U M 10V
C7912	404 088 7300	ELECT 22U M 16V
C7913	404 088 7300	ELECT 22U M 16V
C7919	404 084 7502	ELECT 47U M 10V
C801	403 155 4234	CERAMIC 15P J 50V
C802	403 155 4234	CERAMIC 15P J 50V
C803	403 149 9248	CERAMIC 0.01U Z 50V
C804	403 224 7036	CERAMIC 0.047U Z 50V
C811	403 149 9248	CERAMIC 0.01U Z 50V
C812	404 084 7700	ELECT 10U M 16V
C832	403 149 9248	CERAMIC 0.01U Z 50V
C835	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
C851	403 155 1639	CERAMIC 33P J 50V
C853	403 155 1639	CERAMIC 33P J 50V
C854	403 155 1639	CERAMIC 33P J 50V
C855	403 155 1639	CERAMIC 33P J 50V
C861	404 084 8806	ELECT 1U M 50V
C878	404 084 8806	ELECT 1U M 50V
C880	403 305 3527	CERAMIC 0.1U Z 50V
C882	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
C891	403 113 3835	CERAMIC 1000P K 50V
C892	404 084 8806	ELECT 1U M 50V
C893	404 084 9001	ELECT 2.2U M 50V
C894	403 333 5128	CERAMIC 0.033U K 50V

RESISTOR

Ref. No.	Part No.	Description
R001	401 105 1630	MT-GLAZE 15K JA 1/16W
R002	401 105 1630	MT-GLAZE 15K JA 1/16W
R003	401 105 3337	MT-GLAZE 2.7K JA 1/16W
R004	401 105 3337	MT-GLAZE 2.7K JA 1/16W
R005	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
R006	401 105 7939	MT-GLAZE 0.000 ZA 1/16W

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R007	401 015 6534	CARBON 2.2 JA 1/4W	R1307	401 105 0732	MT-GLAZE 100K JA 1/16W
R008	401 015 6534	CARBON 2.2 JA 1/4W	R1308	401 105 0732	MT-GLAZE 100K JA 1/16W
R010	401 105 4027	MT-GLAZE 330 JA 1/16W	R1309	401 113 4422	MT-GLAZE 75 JA 1/16W
R011	401 105 0613	MT-GLAZE 10K JA 1/16W	R1310	401 113 4422	MT-GLAZE 75 JA 1/16W
R012	401 105 0732	MT-GLAZE 100K JA 1/16W	R1311	401 113 4422	MT-GLAZE 75 JA 1/16W
R013	401 105 0633	MT-GLAZE 10K JA 1/16W	R1312	401 105 0732	MT-GLAZE 100K JA 1/16W
R014	401 021 1946	CARBON 560 JA 1/4W	R1313	401 105 0732	MT-GLAZE 100K JA 1/16W
R015	401 021 1946	CARBON 560 JA 1/4W	R1314	401 113 4422	MT-GLAZE 75 JA 1/16W
R021	401 269 1508	OXIDE-MT 0.56 JA 2W	R1331	401 113 4422	MT-GLAZE 75 JA 1/16W
R021A	401 269 1508	OXIDE-MT 0.56 JA 2W	R171	401 025 7429	CARBON 220 JA 1/6W
R023	401 026 1020	CARBON 2.7K JA 1/6W	R172	401 026 7022	CARBON 3.9K JA 1/6W
R031	401 024 8021	CARBON 1M JA 1/6W	R174	401 105 0534	MT-GLAZE 1K JA 1/16W
R032	401 105 8025	MT-GLAZE 1M JA 1/16W	R177	401 105 5925	MT-GLAZE 560 JA 1/16W
R033	401 027 6123	CARBON 680K JA 1/6W	R178	401 105 5925	MT-GLAZE 560 JA 1/16W
R035	401 105 0633	MT-GLAZE 10K JA 1/16W	R1902	401 105 2132	MT-GLAZE 18K JA 1/16W
R036	401 012 7049	CARBON 10K JA 1/4W	R1903	401 105 6625	MT-GLAZE 6.8K JA 1/16W
R1001	401 105 2726	MT-GLAZE 220 JA 1/16W	R1904	401 105 5331	MT-GLAZE 4.7K JA 1/16W
R1002	401 105 2726	MT-GLAZE 220 JA 1/16W	R1905	401 105 3337	MT-GLAZE 2.7K JA 1/16W
R1005	401 105 2726	MT-GLAZE 220 JA 1/16W	R1906	401 105 2835	MT-GLAZE 2.2K JA 1/16W
R1006	401 105 2726	MT-GLAZE 220 JA 1/16W	R1907	401 026 0627	CARBON 270 JA 1/6W
R1007	401 105 2726	MT-GLAZE 220 JA 1/16W	R1908	401 105 0633	MT-GLAZE 10K JA 1/16W
R1008	401 105 2726	MT-GLAZE 220 JA 1/16W	R1910	401 105 0425	MT-GLAZE 100 JA 1/16W
R1009	401 105 5222	MT-GLAZE 470 JA 1/16W	R1911	401 025 7429	CARBON 220 JA 1/6W
R1010	401 105 0633	MT-GLAZE 10K JA 1/16W	R1912	401 105 2726	MT-GLAZE 220 JA 1/16W
R1011	401 105 5222	MT-GLAZE 470 JA 1/16W	R1913	401 105 2726	MT-GLAZE 220 JA 1/16W
R1012	401 105 2726	MT-GLAZE 220 JA 1/16W	R192	401 105 2726	MT-GLAZE 220 JA 1/16W
R1013	401 105 0534	MT-GLAZE 1K JA 1/16W	R195	401 105 0534	MT-GLAZE 1K JA 1/16W
R1014	401 105 0534	MT-GLAZE 1K JA 1/16W	R199	401 027 2323	CARBON 560 JA 1/6W
R1015	401 105 0534	MT-GLAZE 1K JA 1/16W	R208	401 105 0534	MT-GLAZE 1K JA 1/16W
R1017	401 105 0425	MT-GLAZE 100 JA 1/16W	R209	401 048 6849	MT-FILM 4.7K FA 1/4W
R1018	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R210	401 105 4136	MT-GLAZE 3.3K JA 1/16W
R1019	401 105 5222	MT-GLAZE 470 JA 1/16W	R221	401 105 0534	MT-GLAZE 1K JA 1/16W
R1020	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R222	401 105 0534	MT-GLAZE 1K JA 1/16W
R1021	401 024 7024	CARBON 1K JA 1/6W	R223	401 105 0534	MT-GLAZE 1K JA 1/16W
R1022	401 024 7024	CARBON 1K JA 1/6W	R224	401 105 1125	MT-GLAZE 12K JA 1/16W
R1026	401 105 4027	MT-GLAZE 330 JA 1/16W	R225	401 105 1125	MT-GLAZE 12K JA 1/16W
R1028	401 025 7429	CARBON 220 JA 1/6W	R226	401 105 2934	MT-GLAZE 22K JA 1/16W
R103	401 061 8418	OXIDE-MT 39K JA 1W	R227	401 105 4235	MT-GLAZE 33K JA 1/16W
R1030	401 027 5225	CARBON 680 JA 1/6W	R228	401 105 0732	MT-GLAZE 100K JA 1/16W
R1031	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R229	401 105 6526	MT-GLAZE 680 JA 1/16W
R1032	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R230	401 105 4027	MT-GLAZE 330 JA 1/16W
R1033	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R234	401 105 5826	MT-GLAZE 56 JA 1/16W
R1034	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R235	401 105 5826	MT-GLAZE 56 JA 1/16W
R1037	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R236	401 105 5826	MT-GLAZE 56 JA 1/16W
R1038	401 105 4027	MT-GLAZE 330 JA 1/16W	R237	401 026 9323	CARBON 47 JA 1/6W
R1040	401 105 0425	MT-GLAZE 100 JA 1/16W	R238	401 025 1328	CARBON 150 JA 1/6W
R1041	401 105 0425	MT-GLAZE 100 JA 1/16W	R239	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
R105	401 105 0534	MT-GLAZE 1K JA 1/16W	R240	401 105 5222	MT-GLAZE 470 JA 1/16W
R106	401 105 0425	MT-GLAZE 100 JA 1/16W	R243	401 024 6720	CARBON 100 JA 1/6W
R107	401 105 0425	MT-GLAZE 100 JA 1/16W	R244	401 105 5430	MT-GLAZE 47K JA 1/16W
R108	401 105 2132	MT-GLAZE 18K JA 1/16W	R245	401 105 5430	MT-GLAZE 47K JA 1/16W
R109	401 105 8223	MT-GLAZE 68K JA 1/16W	R246	401 014 2933	CARBON 150 JA 1/4W
R1101	401 007 7641	CARBON 150 JA 1/2W	R250	401 105 0633	MT-GLAZE 10K JA 1/16W
R1102	401 007 7641	CARBON 150 JA 1/2W	R271	401 024 6720	CARBON 100 JA 1/6W
R1112	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R272	401 024 6720	CARBON 100 JA 1/6W
R1114	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R273	401 062 9216	OXIDE-MT 6.8 JA 1W
R114	401 105 2726	MT-GLAZE 220 JA 1/16W	R274	401 062 9216	OXIDE-MT 6.8 JA 1W
R114A	401 105 2726	MT-GLAZE 220 JA 1/16W	R289	401 105 4027	MT-GLAZE 330 JA 1/16W
R117	401 105 6021	MT-GLAZE 5.6K JA 1/16W	R290	401 105 0633	MT-GLAZE 10K JA 1/16W
R118	401 105 2726	MT-GLAZE 220 JA 1/16W	R291	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
R119	401 105 4423	MT-GLAZE 39 JA 1/16W	R293	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
R1300	401 105 0633	MT-GLAZE 10K JA 1/16W	R352	401 105 0633	MT-GLAZE 10K JA 1/16W
R1301	401 113 4422	MT-GLAZE 75 JA 1/16W	R354	401 105 2934	MT-GLAZE 22K JA 1/16W
R1302	401 113 4422	MT-GLAZE 75 JA 1/16W	R355	401 012 7049	CARBON 10K JA 1/4W
R1304	401 105 0732	MT-GLAZE 100K JA 1/16W	R358	401 105 3416	MT-GLAZE 27K JA 1/16W
R1305	401 105 0732	MT-GLAZE 100K JA 1/16W	R420	401 019 3044	CARBON 39K JA 1/4W
R1306	401 113 4422	MT-GLAZE 75 JA 1/16W	R421	401 027 5522	CARBON 6.8K JA 1/6W

Ref. No.	Part No.	Description
R423	401 020 2944	CARBON 47K JA 1/4W
R424	401 024 7024	CARBON 1K JA 1/6W
R426	401 105 1630	MT-GLAZE 15K JA 1/16W
R432	401 105 0534	MT-GLAZE 1K JA 1/16W
R433	401 007 1134	CARBON 1K JA 1/2W
R434	401 059 7218	OXIDE-MT 180 JA 1W
R435	402 082 6107	WIRE WOUND 5.6 KA 7W
R436	401 105 0732	MT-GLAZE 100K JA 1/16W
R441	401 064 9214	OXIDE-MT 1K JA 2W
R442	401 064 8603	OXIDE-MT 1K JA 2W
	402 092 9600	OXIDE-MT 1KJA 2W
R449	401 062 6522	OXIDE-MT 560 JA 1W
R460	401 026 7626	CARBON 390K JA 1/6W
R461	401 026 1624	CARBON 270K JA 1/6W
R467	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
R468	401 025 4626	CARBON 18K JA 1/6W
R471	401 025 1625	CARBON 1.5K JA 1/6W
R473	401 027 5225	CARBON 680 JA 1/6W
R475	401 009 5843	CARBON 330 JA 1/2W
R476	401 024 7430	CARBON 10K JA 1/6W
R479	401 026 9927	CARBON 4.7K JA 1/6W
R480	401 025 2325	CARBON 150K JA 1/6W
R481	401 064 5602	OXIDE-MT 1.8 JA 2W
	402 092 9402	OXIDE-MT 1.8JA 2W
R485	401 012 8145	CARBON 100K JA 1/4W
R486	401 105 6021	MT-GLAZE 5.6K JA 1/16W
R488	402 002 4909	FUSIBLE RES 2.2 J- 1W
R490	401 023 3740	CARBON 82K JA 1/4W
R506	401 025 7825	CARBON 2.2K JA 1/6W
R507	401 024 7430	CARBON 10K JA 1/6W
R508	401 027 8622	CARBON 8.2K JA 1/6W
R510	401 024 7430	CARBON 10K JA 1/6W
R511	401 024 7430	CARBON 10K JA 1/6W
R512	401 020 0841	CARBON 470 JA 1/4W
R514	401 027 7229	CARBON 7.5K JA 1/6W
R515	401 026 4625	CARBON 33K JA 1/6W
R516	401 024 9325	CARBON 1.2K JA 1/6W
R518	401 064 4011	OXIDE-MT 1 JA 2W
	402 092 9204	OXIDE-MT 1JA 2W
R522	401 027 2323	CARBON 560 JA 1/6W
R523	401 027 5027	CARBON 68 JA 1/6W
R524	401 065 7120	OXIDE-MT 150 JA 2W
R525	401 064 8217	OXIDE-MT 100 JA 2W
R527	401 027 3023	CARBON 56K JA 1/6W
R528	401 064 9214	OXIDE-MT 1K JA 2W
R529	401 058 4426	OXIDE-MT 1K JA 1W
R591	401 177 2129	MT-GLAZE 4.7M JA 1/16W
R592	401 027 2620	CARBON 5.6K JA 1/6W
R593	401 105 6021	MT-GLAZE 5.6K JA 1/16W
R594	401 027 0329	CARBON 47K JA 1/6W
R595	401 105 0633	MT-GLAZE 10K JA 1/16W
R596	401 105 2934	MT-GLAZE 22K JA 1/16W
R601	401 008 8627	CARBON 220K JA 1/2W
R602	402 085 6500	WIRE WOUND 2.7 KA 7W
R611	401 020 0841	CARBON 470 JA 1/4W
R613	402 062 6608	FUSIBLE RES 1.5K J- 1/4W
	402 099 7104	FUSIBLE RES 1.5K J 1/4W
R614	401 025 8228	CARBON 22K JA 1/6W
R615	401 025 7429	CARBON 220 JA 1/6W
R616	401 024 7430	CARBON 10K JA 1/6W
R619	401 016 1538	CARBON 22 JA 1/4W
R620	401 010 4812	CARBON 470K JA 1/2W
R621	401 010 4812	CARBON 470K JA 1/2W
R622	401 019 9640	CARBON 47 JA 1/4W
R623	401 026 4922	CARBON 330K JA 1/6W
R624	402 060 9403	FUSIBLE RES 10 J- 1/2W
R625	401 069 4818	OXIDE-MT 68K JA 2W
R626	401 069 4818	OXIDE-MT 68K JA 2W
R627	401 025 8228	CARBON 22K JA 1/6W
⚠ R628	402 000 8602	SOLID 5.6M KA 1/2W
	402 097 5706	CARBON 5.6M KA 1/2W
	402 088 1106	RESISTER 5.6M JA 1/2W
⚠ R629	402 000 8602	SOLID 5.6M KA 1/2W
	402 097 5706	CARBON 5.6M KA 1/2W
	402 088 1106	RESISTER 5.6M JA 1/2W
R631	401 026 7428	CARBON 39K JA 1/6W
R632	401 064 1614	OXIDE-MT 0.33 JA 2W
R633	401 064 1614	OXIDE-MT 0.33 JA 2W
R634	401 024 7430	CARBON 10K JA 1/6W
R635	401 025 8228	CARBON 22K JA 1/6W
R636	401 024 7430	CARBON 10K JA 1/6W
R637	401 025 8228	CARBON 22K JA 1/6W
R638	401 012 5748	CARBON 1K JA 1/4W
R641	401 024 7430	CARBON 10K JA 1/6W
R642	401 027 0329	CARBON 47K JA 1/6W
R643	401 025 4626	CARBON 18K JA 1/6W
R644	401 025 8228	CARBON 22K JA 1/6W
R652	401 012 7049	CARBON 10K JA 1/4W
R653	401 068 2013	OXIDE-MT 4.7 JA 2W
	402 093 1801	OXIDE-MT 4.7JA 2W
R654	401 007 2319	CARBON 100K JA 1/2W
R655	401 012 7049	CARBON 10K JA 1/4W
R656	401 025 3827	CARBON 180 JA 1/6W
R657	401 009 9811	CARBON 3.9K JA 1/2W
R658	401 012 7049	CARBON 10K JA 1/4W
R659	401 015 2744	CARBON 1.8K JA 1/4W
R661	401 007 2319	CARBON 100K JA 1/2W
R662	401 026 9927	CARBON 4.7K JA 1/6W
R663	401 014 6149	CARBON 150K JA 1/4W
R664	401 010 4317	CARBON 47K JA 1/2W
R665	401 025 8228	CARBON 22K JA 1/6W
R666	401 105 2934	MT-GLAZE 22K JA 1/16W
R667	401 105 0633	MT-GLAZE 10K JA 1/16W
R668	401 069 0711	OXIDE-MT 6.8 JA 2W
	402 093 2402	OXIDE-MT 6.8JA 2W
R669	401 069 0711	OXIDE-MT 6.8 JA 2W
	402 093 2402	OXIDE-MT 6.8JA 2W
R670	401 024 9721	CARBON 12K JA 1/6W
R671	401 025 8723	CARBON 220K JA 1/6W
R672	401 105 6120	MT-GLAZE 560K JA 1/16W
R675	402 092 2106	FUSIBLE RES 0.22 J 1/2W
R676	401 105 5331	MT-GLAZE 4.7K JA 1/16W
R677	401 105 4235	MT-GLAZE 33K JA 1/16W
R678	401 105 4235	MT-GLAZE 33K JA 1/16W
R679	401 105 4235	MT-GLAZE 33K JA 1/16W
R681	401 105 2934	MT-GLAZE 22K JA 1/16W
R682	401 105 6110	MT-GLAZE 560K JA 1/16W
R691	401 012 3447	CARBON 10 JA 1/4W
R692	401 105 1521	MT-GLAZE 1.5K JA 1/16W
R694	401 064 6817	OXIDE-MT 10 JA 2W
R7904	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
R7909	401 105 0534	MT-GLAZE 1K JA 1/16W
R7910	401 105 0633	MT-GLAZE 10K JA 1/16W
R7911	401 105 0633	MT-GLAZE 10K JA 1/16W
R7912	401 105 5826	MT-GLAZE 56 JA 1/16W
R7913	401 105 6526	MT-GLAZE 680 JA 1/16W
R7914	401 105 3921	MT-GLAZE 33 JA 1/16W
R7915	401 105 0633	MT-GLAZE 10K JA 1/16W
R7916	401 105 0633	MT-GLAZE 10K JA 1/16W
R7917	401 105 5826	MT-GLAZE 56 JA 1/16W
R7918	401 105 0534	MT-GLAZE 1K JA 1/16W
R7919	401 105 3921	MT-GLAZE 33 JA 1/16W
R7920	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
R7921	401 105 0534	MT-GLAZE 1K JA 1/16W

Ref. No.	Part No.	Description
R7922	401 105 0534	MT-GLAZE 1K JA 1/16W
R7923	401 105 5123	MT-GLAZE 47 JA 1/16W
R7924	401 105 3228	MT-GLAZE 270 JA 1/16W
R7925	401 105 0534	MT-GLAZE 1K JA 1/16W
R7926	401 105 0534	MT-GLAZE 1K JA 1/16W
R801	401 105 3525	MT-GLAZE 270K JA 1/16W
R812	401 105 0633	MT-GLAZE 10K JA 1/16W
R813	401 105 3436	MT-GLAZE 27K JA 1/16W
R814	401 105 0633	MT-GLAZE 10K JA 1/16W
R818	401 105 0425	MT-GLAZE 100 JA 1/16W
R819	401 105 0425	MT-GLAZE 100 JA 1/16W
R826	401 105 0633	MT-GLAZE 10K JA 1/16W
R827	401 105 0633	MT-GLAZE 10K JA 1/16W
R828	401 105 0633	MT-GLAZE 10K JA 1/16W
R829	401 105 0633	MT-GLAZE 10K JA 1/16W
R831	401 105 5925	MT-GLAZE 560 JA 1/16W
R832	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
R834	401 024 7430	CARBON 10K JA 1/6W
R835	401 105 0633	MT-GLAZE 10K JA 1/16W
R836	401 105 0633	MT-GLAZE 10K JA 1/16W
R837	401 105 0633	MT-GLAZE 10K JA 1/16W
R838	401 105 0633	MT-GLAZE 10K JA 1/16W
R839	401 105 0425	MT-GLAZE 100 JA 1/16W
R840	401 105 0425	MT-GLAZE 100 JA 1/16W
R841	401 105 0633	MT-GLAZE 10K JA 1/16W
R842	401 105 0633	MT-GLAZE 10K JA 1/16W
R847	401 024 7430	CARBON 10K JA 1/6W
R851	401 105 4621	MT-GLAZE 3.9K JA 1/16W
R852	401 105 4621	MT-GLAZE 3.9K JA 1/16W
R853	401 105 6021	MT-GLAZE 5.6K JA 1/16W
R855	401 105 6021	MT-GLAZE 5.6K JA 1/16W
R857	401 105 6021	MT-GLAZE 5.6K JA 1/16W
R861	401 105 1521	MT-GLAZE 1.5K JA 1/16W
R862	401 105 7424	MT-GLAZE 8.2K JA 1/16W
R863	401 105 5331	MT-GLAZE 4.7K JA 1/16W
R870	401 105 2934	MT-GLAZE 22K JA 1/16W
R871	401 105 0633	MT-GLAZE 10K JA 1/16W
R878	401 105 6021	MT-GLAZE 5.6K JA 1/16W
R881	401 105 0633	MT-GLAZE 10K JA 1/16W
R882	401 105 4136	MT-GLAZE 3.3K JA 1/16W
R883	401 105 4235	MT-GLAZE 33K JA 1/16W
R885	401 026 1327	CARBON 27K JA 1/6W
R886	401 105 2934	MT-GLAZE 22K JA 1/16W
R887	401 105 2934	MT-GLAZE 22K JA 1/16W
R888	401 105 2726	MT-GLAZE 220 JA 1/16W
R891	401 026 9620	CARBON 470 JA 1/6W
R892	401 105 7325	MT-GLAZE 820 JA 1/16W
R893	401 105 8025	MT-GLAZE 1M JA 1/16W
R894	401 105 0425	MT-GLAZE 100 JA 1/16W
R895	401 105 5529	MT-GLAZE 470K JA 1/16W
VARIABLE RESISTOR		
VR651	645 006 5125	VR,SEMI,2K N
	652 000 0100	VR,SEMI,2K N
TRANSFORMER		
T431	652 000 0704	TRANS,DRIVE
⚠ T471	652 001 0840	TRANS,FLYBACK
⚠ T611A	652 001 0857	TRANS,POWER,PULSE
COIL		
L171	645 053 9015	TRANS,OSC,45.75MHZ
L191	645 001 4604	INDUCTOR,12U K
L273	645 007 9542	INDUCTOR,12U J
L431	645 008 5628	INDUCTOR,1U M
	610 032 5821	FILTER COIL
L432	652 000 0469	CORE,PIPE
	610 078 4635	PIPE CORE
L441	652 000 1343	COIL,LINEARITY
L442	652 001 0284	INDUCTOR,133UH
L461	645 005 5645	INDUCTOR,2200U K
	652 000 0742	INDUCTOR,2.0MH
	610 031 1367	INDUCTOR 202J
	610 211 3488	INDUCTOR
L462	652 000 2005	INDUCTOR,438UH
⚠ L601	645 017 6159	LINE FILTER
	610 031 5938	LINE FILTER
L611	610 078 5953	PIPE CORE
L612	610 078 5953	PIPE CORE
L613	610 078 5953	PIPE CORE
L614	610 078 5953	PIPE CORE
L651	610 078 6820	PIPE CORE
L652	610 078 6820	PIPE CORE
L653	610 078 6820	PIPE CORE
L654	610 078 6820	PIPE CORE
DIODE		
D006	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D020	408 047 2207	ZENER DIODE MTZJ10B-52
D021	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D030	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D031	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D103	408 047 6106	ZENER DIODE MTZJ36A-52
D1301	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1302	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1304	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1305	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1306	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1307	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1308	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1309	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1310	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1311	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1312	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1322	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1323	407 221 7116	ZENER DIODE UDZS-TE-1712B
D1901	407 196 7705	LED SLP-581D-51
	407 158 9204	LED SPR-39MVWF
	408 050 8906	LED M209GRW
D1901A	655 000 5717	LED HOLDER-C6CP
D1903	407 149 0817	DIODE 1SS355-TE-17
D1904	407 149 0817	DIODE 1SS355-TE-17
D1905	407 149 0817	DIODE 1SS355-TE-17
D1906	407 149 0817	DIODE 1SS355-TE-17
D1907	407 149 0817	DIODE 1SS355-TE-17
D1908	407 149 0817	DIODE 1SS355-TE-17
D201	407 005 7318	DIODE EM01Z-V0
	407 005 8612	DIODE ERA15-02-V5
D352	408 047 6700	ZENER DIODE MTZJ5.1B-52
D401	407 149 0817	DIODE 1SS355-TE-17
D402	407 149 0817	DIODE 1SS355-TE-17
D421	408 047 5208	ZENER DIODE MTZJ16A-52

Ref. No.	Part No.	Description
D438	407 095 8001	DIODE ERD07-15L
D439	407 006 4128	DIODE ERB44-04V1
D442	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D461	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D462	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D465	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D466	408 047 5505	ZENER DIODE MTZJ20A-52
D467	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D468	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D469	407 007 7415	DIODE EU1-V1
D470	407 054 7106	ZENER DIODE RD16EB2
D471	407 055 2912	ZENER DIODE RD22EB2
D476	408 048 0202	ZENER DIODE MTZJ9.1C-26
D485	407 007 7415	DIODE EU1-V1
D486	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D501	407 005 7318	DIODE EM01Z-V0
	407 005 8612	DIODE ERA15-02-V5
D507	407 118 2207	ZENER DIODE 1Z75
D512	407 005 7318	DIODE EM01Z-V0
	407 005 8612	DIODE ERA15-02-V5
D591	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D592	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D593	408 047 5208	ZENER DIODE MTZJ16A-52
D605	407 006 6310	DIODE ERC05-10BV1
	407 009 6921	DIODE RM11CV1
D606	407 006 6310	DIODE ERC05-10BV1
	407 009 6921	DIODE RM11CV1
D607	407 006 6310	DIODE ERC05-10BV1
	407 009 6921	DIODE RM11CV1
D608	407 006 6310	DIODE ERC05-10BV1
	407 009 6921	DIODE RM11CV1
⚠ D610	407 104 2402	PHOTO COUPLE PC817C
	407 106 6101	PHOTO COUPLE PC817D
D611	407 146 8113	DIODE EG01C
D612	407 005 9837	DIODE ERA81-004-V1
D614	407 007 6626	DIODE ES1V0
D615	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D616	407 055 1816	ZENER DIODE RD20EB2
D617	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D619	408 047 9107	ZENER DIODE MTZJ7.5C-52
D622	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D623	408 048 0004	ZENER DIODE MTZJ9.1B-52
D641	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D651	407 191 3900	DIODE FML-G16S
D652	407 210 5700	DIODE RN1Z
D653	407 154 2704	DIODE YG901C2-LB
D653C		G-FLOIL GREASE*SY-600
	610 077 7613	SILICON GREASE G-746
	610 077 7781	SILICON GREASE
D653D	610 014 5818	WASHER
D654	407 009 8915	DIODE RU3MV1
D655	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D658	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D659	407 149 0817	DIODE 1SS355-TE-17
D661	408 047 8506	ZENER DIODE MTZJ6.8A-52
D662	408 047 8506	ZENER DIODE MTZJ6.8A-52
D664	408 047 3006	ZENER DIODE MTZJ11C-26
D671	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D691	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP
D7902	407 221 7116	ZENER DIODE UDZS-TE-1712B
D7903	407 221 7116	ZENER DIODE UDZS-TE-1712B
D861	407 055 7927	ZENER DIODE RD3.6EL-T1
MISCELLANEOUS		
⚠ F001	645 017 6944	PROTECTOR,1.5A 125V
⚠ F601	423 028 8603	FUSE 250V 4A
	423 024 8409	FUSE 250V 4A
A101	645 064 2777	TUNER,U/V
A1901	645 041 1519	UNIT,REMOCON RECEIVER
	645 044 0519	UNIT,REMOCON RECEIVER
J104	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J107	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J108	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J112	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J113	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J118	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J122	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J123	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J128	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J129	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J132	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J152	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J154	401 105 7939	MT-GLAZE 0.000 ZA 1/16W

Ref. No.	Part No.	Description
J203	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
J226	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JC106	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JC108	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JC109	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JC110	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JC111	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JC112	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JC113	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JC122	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JC1901	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JP001	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JP1026	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
JP172	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
K1101	645 016 6433	JACK,RCA-3
K1301	652 001 5302	JACK,RCA-8
KM	645 006 4791	JACK,PHONE D3.6
⚠PS601	408 046 5407	TH PTDCA1BF4R5Q200
⚠RL601	645 000 4155	RELAY
	645 011 2713	RELAY
	645 024 7828	RELAY
SW1901	645 027 7382	SWITCH,PUSH 1P-1TX1
	645 052 2284	SWITCH,PUSH 1P-1TX1
SW1902	645 027 7382	SWITCH,PUSH 1P-1TX1
	645 052 2284	SWITCH,PUSH 1P-1TX1
SW1903	645 027 7382	SWITCH,PUSH 1P-1TX1
	645 052 2284	SWITCH,PUSH 1P-1TX1
SW1904	645 027 7382	SWITCH,PUSH 1P-1TX1
	645 052 2284	SWITCH,PUSH 1P-1TX1
SW1905	645 027 7382	SWITCH,PUSH 1P-1TX1
	645 052 2284	SWITCH,PUSH 1P-1TX1
SW1906	645 027 7382	SWITCH,PUSH 1P-1TX1
	645 052 2284	SWITCH,PUSH 1P-1TX1
SW501	610 011 2728	SWITCH,LEVER 1P-3T
⚠SW601	645 050 4129	SWITCH,PUSH POWER 2P-2T
	645 053 4904	SWITCH,PUSH POWER 2P-2T
X161	421 008 9008	SAW F TSF5235P
X191	645 009 7850	TRAP,CERAMIC 4.5MHZ
	610 015 3066	CERAMIC TRAP
X211	645 024 8801	OSC,CRYSTAL 4.433619MHZ
	652 001 0154	OSC,CRYSTAL 4.433619MHZ
X801	645 004 1938	OSC,CRYSTAL 32.768KHZ

655 000 8336 ASSY,PWB,MTS C8AE 1LG0B10Y0020A

INTEGRATED CIRCUIT

Ref. No.	Part No.	Description
IC3401	409 467 1118	IC CXA2134Q-T6

CAPACITOR

Ref. No.	Part No.	Description
C3401	404 087 1606	ELECT 0.1U M 50V
C3404	404 089 6401	NP-ELECT 4.7U M 50V
C3406	403 057 7739	POLYESTER 0.012U K 50V
	403 179 3514	POLYESTER 0.012U K 50V
C3407	403 062 5321	POLYESTER 5600P K 50V
	403 179 0711	POLYESTER 5600P K 50V
C3408	404 084 8707	ELECT 0.47U M 50V
C3411	404 084 8707	ELECT 0.47U M 50V
C3412	404 084 8202	ELECT 47U M 16V
C3413	404 084 9209	ELECT 4.7U M 50V
C3414	404 084 7809	ELECT 100U M 16V
C3416	404 089 6401	NP-ELECT 4.7U M 50V
C3417	404 084 9209	ELECT 4.7U M 50V
C3418	404 089 6401	NP-ELECT 4.7U M 50V
C3421	403 060 0724	POLYESTER 2700P K 50V
	403 179 2210	POLYESTER 2700P K 50V
C3422	403 062 0524	POLYESTER 0.047U K 50V
	403 179 0919	POLYESTER 0.047U K 50V
C3423	403 090 6024	TA-SOLID 3.3U K 10V
C3424	404 089 6401	NP-ELECT 4.7U M 50V
C3426	403 090 3627	TA-SOLID 10U K 10V
C3427	404 084 8806	ELECT 1U M 50V
C3431	403 061 8333	POLYESTER 4700P K 50V
	403 179 1114	POLYESTER 4700P K 50V
C3432	404 087 1606	ELECT 0.1U M 50V
C3433	403 061 8333	POLYESTER 4700P K 50V
	403 179 1114	POLYESTER 4700P K 50V
C3434	403 059 6235	POLYESTER 0.022U K 50V
	403 179 2418	POLYESTER 0.022U K 50V
C3436	404 089 6401	NP-ELECT 4.7U M 50V
C3439	404 089 6401	NP-ELECT 4.7U M 50V
C3451	404 084 9209	ELECT 4.7U M 50V
C3452	404 084 9209	ELECT 4.7U M 50V

RESISTOR

Ref. No.	Part No.	Description
R3401	401 025 7429	CARBON 220 JA 1/6W
R3402	401 025 7429	CARBON 220 JA 1/6W
R3406	401 024 7727	CARBON 100K JA 1/6W
R3407	401 024 8021	CARBON 1M JA 1/6W
R3411	401 027 4634	CARBON 62K JA 1/6W
R3421	401 026 4328	CARBON 3.3K JA 1/6W
R3422	401 026 2948	CARBON 3K JA 1/6W
R3426	401 026 7022	CARBON 3.9K JA 1/6W
R3432	401 024 7430	CARBON 10K JA 1/6W
R3433	401 024 7430	CARBON 10K JA 1/6W

DIODE

Ref. No.	Part No.	Description
D3401	407 013 4326	DIODE 1S2076A-TD
	407 013 7109	DIODE 1S2473
	407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP

655 000 8251 ASSY,PWB,CRT C8AE 1LG0B10Y0020B

TRANSISTOR

Ref. No.	Part No.	Description
Q721	405 001 7417	TR 2SA1015OSAN
	405 001 7615	TR 2SA1015-Y(SAN)-TPE2
	405 004 3119	TR 2SA564A-Q(CU)-TA
	405 004 3218	TR 2SA564A-R(CU)-TA
	405 151 3324	TR 2SA608NF-NPA-AT
	405 006 1717	TR 2SA933S-TP-Q
	405 006 1816	TR 2SA933S-TP-R
	406 000 6804	TR 2SA1015-GR(SAN)

INTEGRATED CIRCUIT

Ref. No.	Part No.	Description
IC701	409 468 8403	IC TDA6103Q/N3

CAPACITOR

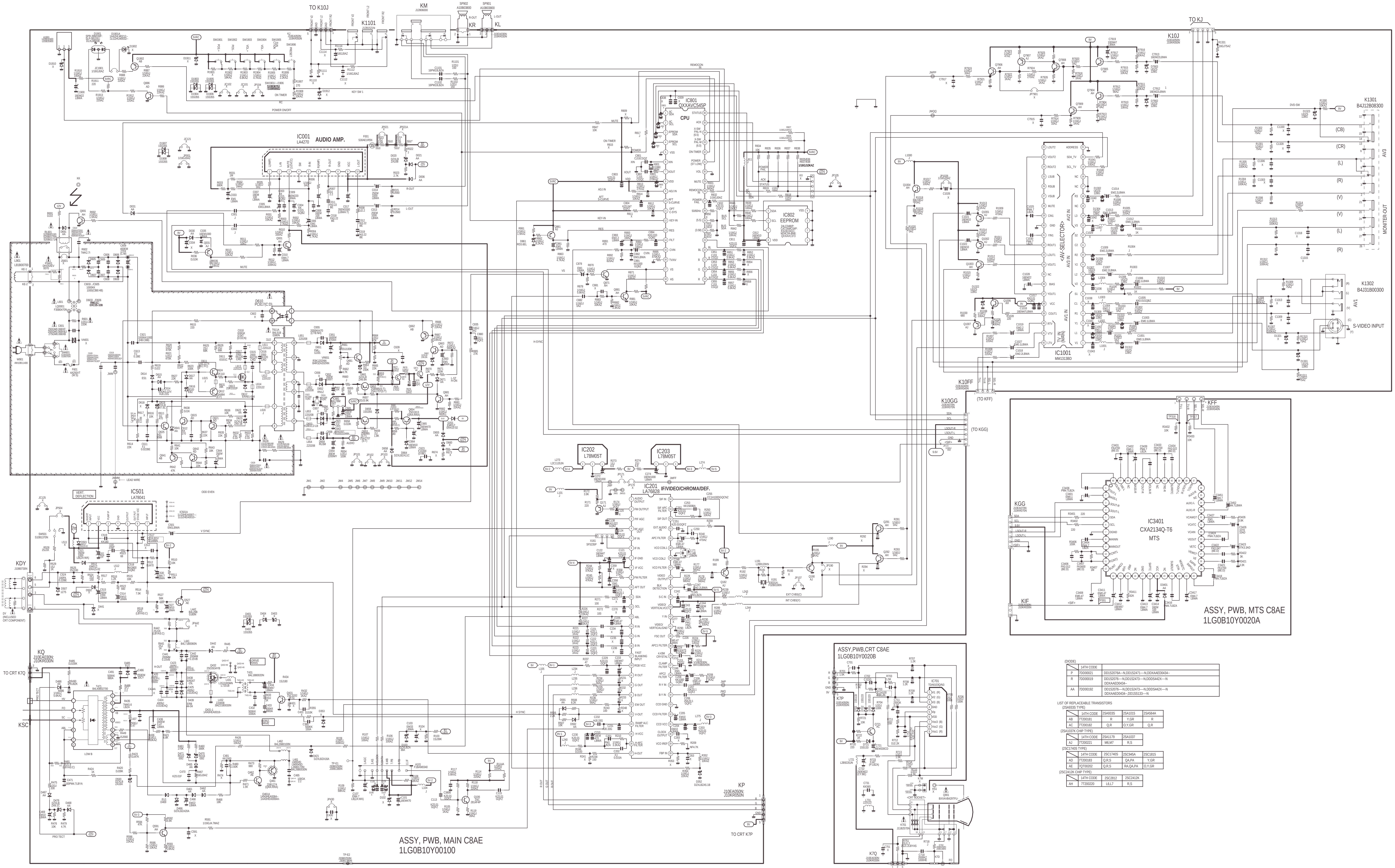
Ref. No.	Part No.	Description
C702	403 017 7523	CERAMIC 22P J 50V
C703	403 146 7435	CERAMIC 10P J 50V
C711	403 159 7439	MT-POLYEST 0.1U K 250V
C712	403 270 3423	MT-POLYEST 0.22U K 63V
	403 237 7941	MT-COMPO 0.22U J 50V
C718	403 077 2817	CERAMIC 1000P Z 2K
C721	403 201 5011	ELECT 330U M 16V
C722	403 055 8421	ELECT 22U M 250V
	403 260 0415	ELECT 22U M 250V
C731	403 074 5722	CERAMIC 560P K 50V

RESISTOR

Ref. No.	Part No.	Description
R701	401 025 1625	CARBON 1.5K JA 1/6W

Ref. No.	Part No.	Description
R702	401 025 1625	CARBON 1.5K JA 1/6W
R703	401 025 1625	CARBON 1.5K JA 1/6W
R704	401 007 2319	CARBON 100K JA 1/2W
R705	401 065 1217	OXIDE-MT 100K JA 2W
R706	401 007 2319	CARBON 100K JA 1/2W
R707	401 024 9325	CARBON 1.2K JA 1/6W
R708	401 024 9325	CARBON 1.2K JA 1/6W
R709	401 024 9325	CARBON 1.2K JA 1/6W
R711	401 008 8627	CARBON 220K JA 1/2W
R712	401 016 3849	CARBON 2.2K JA 1/4W
R713	401 007 8440	CARBON 1.5K JA 1/2W
R714	401 007 8440	CARBON 1.5K JA 1/2W
R715	401 007 8440	CARBON 1.5K JA 1/2W
R720	401 025 7429	CARBON 220 JA 1/6W
R721	401 024 7430	CARBON 10K JA 1/6W
R722	401 024 7024	CARBON 1K JA 1/6W
R723	402 061 2106	FUSIBLE RES 47 J- 1/4W
	402 097 4006	FUSIBLE RES 47 J 1/4W
R751	401 064 4813	OXIDE-MT 1.2 JA 2W
	402 093 4604	OXIDE-MT 1.2JA 2W
COIL		
L721	645 001 4642	INDUCTOR,22U J
L731	610 078 5953	PIPE CORE
DIODE		
D701	407 012 4416	DIODE 1SS133 T-77
D702	407 012 4416	DIODE 1SS133 T-77
D703	407 012 4416	DIODE 1SS133 T-77
D721	407 012 4416	DIODE 1SS133 T-77
MISCELLANEOUS		
⚠K701	645 026 2005	SOCKET,CRT 8P

Mar./’05



THE SERVICE PRECAUTION:
The area enclosed by this line(⊥⊥⊥) is directly connected with AC mains voltage. When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.

PRODUCT SAFETY NOTICE:

Product safety should be considered when a component replacement is made in any area of a receiver.

Components indicated by a mark ⚠ in this circuit diagram show components whose values have special significance to product safety. It is particularly recommended that only parts specified on the part service manual be used for components replacement pointed out by the mark.

CIRCUIT DIAGRAM NOTICE:
1. All resistance value are in ohms, K=1,000, M=1,000,000.
2. All resistance rated wattages are 1/6W unless otherwise noted.
3. Excepting electrolytic capacitors, all capacitance values of less than 1 are expressed in μ F and more than 1 are pF.
4. All capacitance rated voltages are 50V unless otherwise noted.
5. All inductance values are in μ H.
6. Voltage readings take with a "VTVM" are from point indicated chassis ground. Voltage readings taken by using NTSC colour bar signal are with all controls at normal position. Some voltage may vary with signal strength.
7. Waveform were taken with NTSC colour bar and controls adjusted for normal picture. Waveforms were taken by using a wide band oscilloscope and a low capacity probe.
8. This circuit diagram covers a basic or representative chassis only. There may be some components or partial circuit differences between the actual chassis and the circuit diagram.
9. Parts specified with "X" are not installed in this model.
10. Parts specified with "J" are just jumper wires.

11. Expression of capacitance and resistance in circuit diagrme.

Capacitance (Example)

1000 C M 2000 D
- D — Characteristic
- 2000 — Capacitance value (220pF)
- M — Allowable error (±20%): J= ± 5%, K= ±10%, M= ±20%
- C — Kind (Ceramic): T, A, U, D: Electrolytic; C, K, B: Ceramic; F: Mylar film; M, N: Polypropylene; Z: Metalized paper
- 1000 — Rated voltage (1,000V)

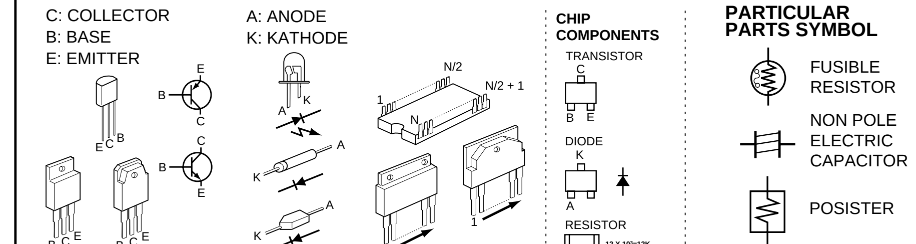
Resistance (Example)

1/2 N J 1.2
- 1.2 — Resistance value (1.2Ω)
- J — Allowable error (±5%)
- N — Kind (M.carbon): D: Carbon; N: Metalized carbon; S: Oxied metalized; W: Wire wounding; C: Solid
- 1/2 — Rated wattage (1/2W)

TRANSISTOR, DIODE AND INTEGRATED CIRCUIT TERMINAL GUIDE

C: COLLECTOR
B: BASE
E: EMITTER

A: ANODE
K: KATHODE



SANSEI

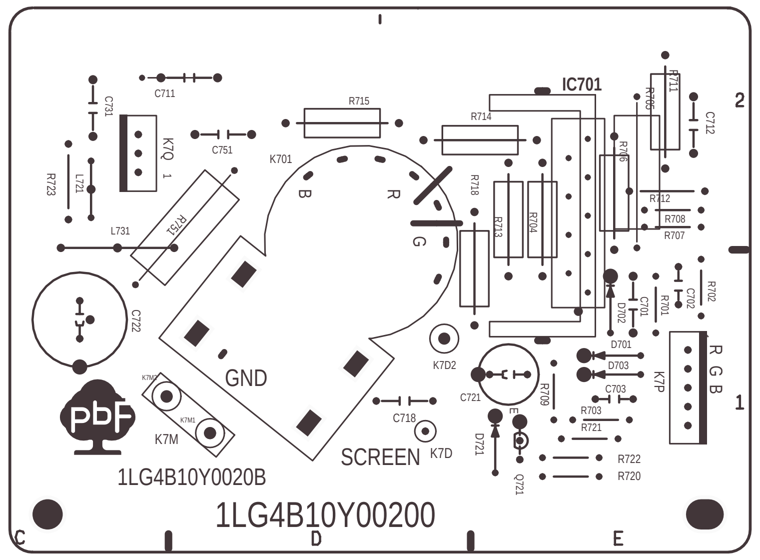
COLOUR TELEVISION

LB4-C CHASSIS SERIES

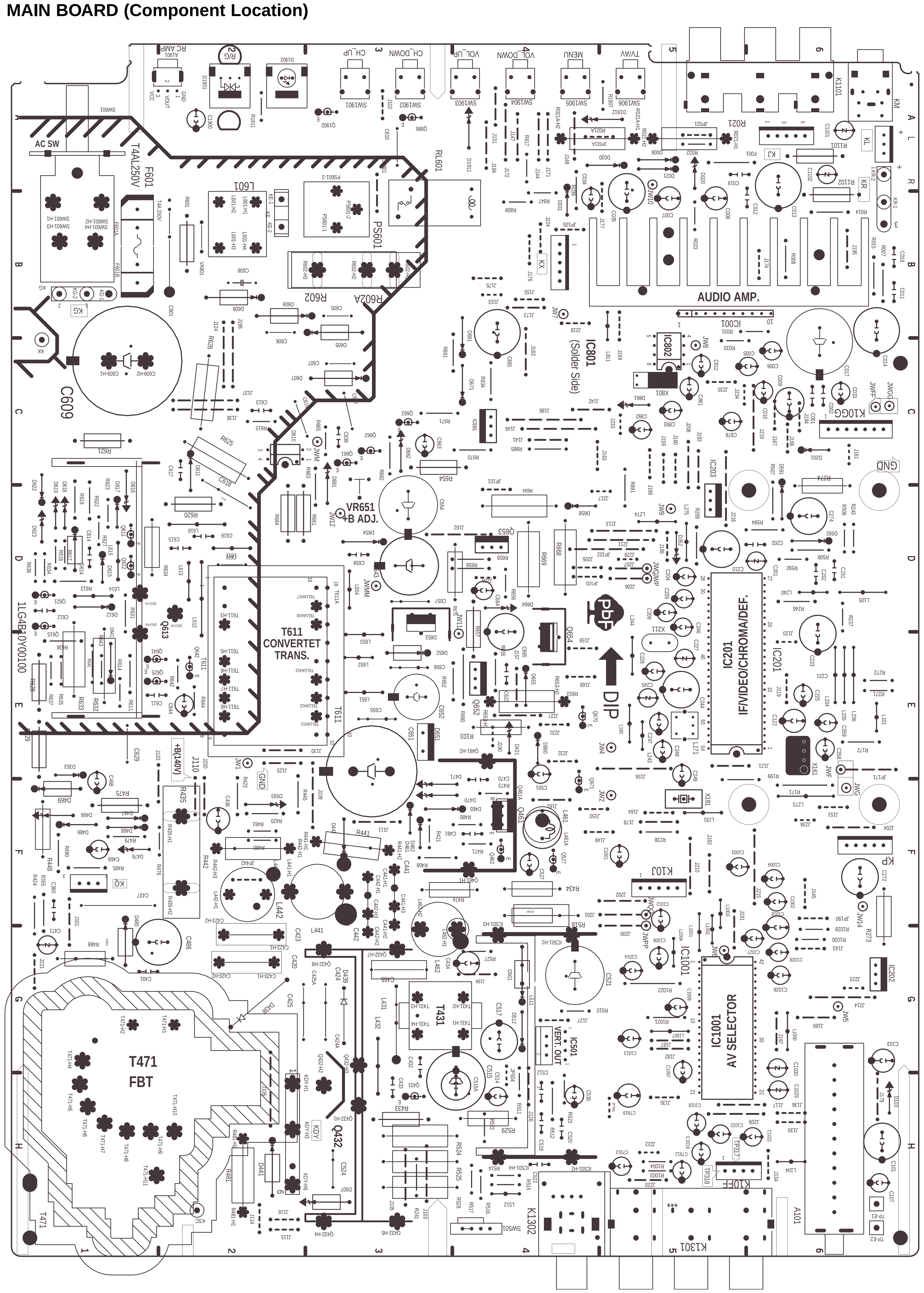
SERVICE REF. NO. TS5129F-00

C8AP

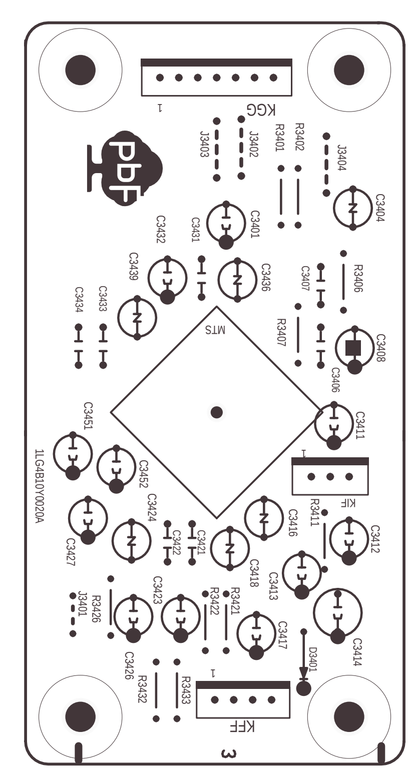
CRT BOARD (Component Location)



MAIN BOARD (Component Location)



MTS BOARD (Component Location)



Waveforms & Voltages

(On the Main Board)

IC001 (AUDIO AMP.)

Pin-1	2.2V	2	1.8V	3	12.0V	4	GND	5	1.7V	6	2.2V	7	12.9V	8	GND	9	24.7V
10	13.1V																

IC201 (IF/VIDEO/CHROMA)

Pin-1	2.3V	2	2.3V	3	2.6V	4	4.0V	5	2.9V	6	2.9V	7	0V	8	5.0V	9	2.3V
10	2.5V	11	4.1V	12	3.9V	13	4.4V	14	1.7V	15	1.7V	16	1.6V	17	0V	18	8.3V
19	2.9V	20	3.2V	21	2.9V	22	2.1V	23	2.2V	24	2.6V	25	5.1V	26	2.7V	27	0.9V
28	1.2V	29	1.7V	30	0.9V	31	5.0V	32	8.8V	33	GND	34	2.8V	35	2.8V	36	2.7V
37	1.8V	38	2.9V	39	3.5V	40	2.0V	41	GND	42	2.9V	43	5.0V	44	2.9V	45	4.3V
46	2.6V	47	3.5V	48	4.2V	49	4.2V	50	2.5V	51	2.2V	52	2.0V	53	2.4V	54	3.2V

IC202 (REG.)

Pin-1	7.8V	2	GND	3	5.0V

IC203 (REG.)

Pin-1	7.9V	2	GND	3	5.0V

IC681 (REG.)

Pin-1	11.5V	2	GND	3	5.0V

IC1001 (AV SELECTOR)

Pin-1:	4.9V	2:	4.3V	3:	4.9V	4:	4.3V	5:	4.9V	6:	8.2V	7:	4.9V	8:	4.3V	9:	5.1V
10:	4.3V	11:	4.9V	12:	8.2V	13:	4.9V	14:	4.3V	15:	N.C.	16:	4.3V	17:	N.C.	18:	N.C.
19:	3.9V	20:	4.1V	21:	0V	22:	4.2V	23:	5.5V	24:	4.2V	25:	4.3V	26:	4.3V	27:	5.2V
28:	0.1V	29:	4.9V	30:	GND	31:	6.1V	32:	4.2V	33:	4.2V	34:	5.5V	35:	N.C.	36:	4.3V
37:	4.8V	38:	9.1V	39:	3.5V	40:	4.3V	41:	5.5V	42:	4.3V						

IC501 (VERT. OUT)

Pin-1	2.4V	2	26.6V	3	14.5V	4	GND	5	3.4V	6	26.3V	7	2.4V

IC801 (CPU)

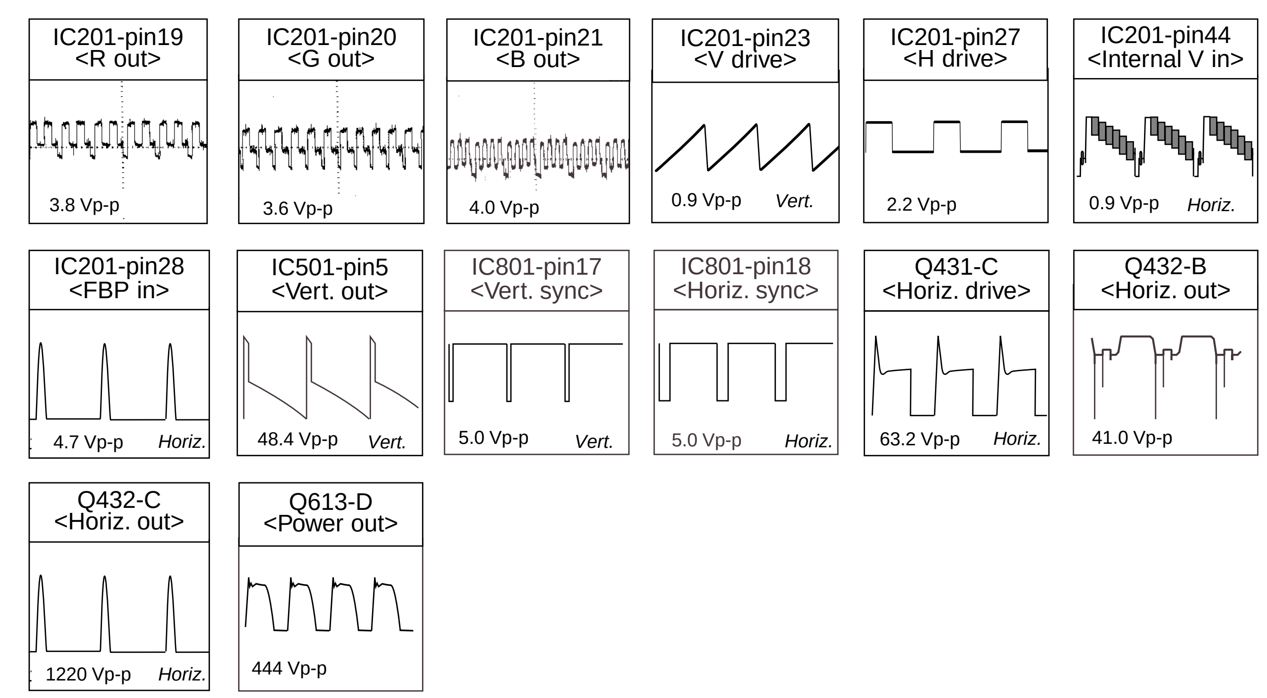
Pin-1	4.1V	2	3.9V	3	5.0V	4	5.0V	5	GND	6	1.9V	7	2.7V	8	5.0V	9	1.3V
10	2.5V	11	4.0V	12	0V	13	5.0V	14	3.6V	15	2.9V	16	0V	17	4.7V	18	4.1V
19	0V	20	0V	21	0V	22	0V	23	0V	24	0V	25	0V	26	0V	27	3.1V
28	4.9V	29	0V	30	GND	31	4.9V	32	5.0V	33	0V	34	0V	35	5.0V	36	5.0V

IC802 (MEMORY)

Pin-1	GND	2	GND	3	GND	4	GND	5	5.0V	6	5.0V	7	GND	8	5.0V

Transistor	B	C	E
Q001	0V	12.1V	0V
Q031	9.0V	0V	8.8V
Q1001	4.2V	0V	4.8V
Q1002	4.2V	0V	4.8V
Q1003	5.5V	9.0V	4.8V
Q1004	4.7V	9.0V	0V
Q1006	3.5V	9.0V	2.9V
Q1007	1.5V	0V	2.1V
Q106	1.1V	5.6V	0.4V
Q190	2.0V	0V	2.7V
Q1902	5.0V	0.4V	5.1V
Q291	4.1V	9.0V	3.4V
Q292	4.1V	9.0V	3.4V
Q431	0.4V	17.6V	0V
Q432	-0.1V	133.7V	0V
Q461	10.2V	0V	10.9V
Q462	0.6V	10.1V	0V
Q527	0V	2.3V	0V
Q581	1.0V	4.6V	0.5V
Q611	3.2 V	26.9V	3.9V
Q612	3.2V	0V	3.9V
Q615	0.1V	3.3V	0V
Q621	0.5V	0V	0V
Q625	0.4V	3.2V	0V
Q641	0.5V	0.4V	0V
Q642	0.7V	0V	0V
Q652	27.9V	28.4V	28.6V
Q653	11.2V	11.8V	12.0V
Q654	9.8V	9.8V	9.0V
Q661	7.1V	36.6V	6.5V
Q662	36.5V	0V	36.6V
Q663	0.5V	36.5V	0.5V
Q7904	4.4V	9.0V	3.8V
Q7905	4.5V	9.0V	3.8V
Q7906	3.8V	9.0V	3.2V
Q7907	8.1V	3.8V	8.8V
Q7908	3.8V	8.1V	3.2V
Q7909	3.8V	9.0V	3.1V
Q861	4.4V	0V	5.0V
Q871	0.2V	4.7V	0V
Q881	-7.0V	0V	4.1V
Q886	0.7V	0.1V	0V

Transistor	G	D	S
Q613	3.9V	271 V	0.1V



(On the MTS Board)

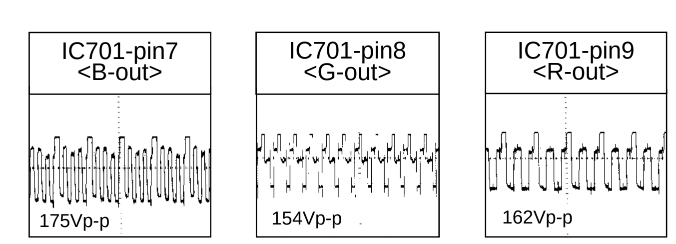
IC3401

Pin-1	4.1V	2	4.2V	3	4.1V	4	4.1V	5	4.1 V	6	3.9V	7	GND	8	4.1V	9	4.1V
10	4.1V	11	4.2V	12	5.1V	13	4.1V	14	1.3V	15	1.3V	16	NC	17	GND	18	3.8V
19	8.2V	20	NC	21	4.1V	22	4.1V	23	4.1V	24	4.1V	25	4.1V	26	4.1V	27	4.1V
28	1.8V	29	4.1V	30	4.1V	31	1.7V	32	4.0V	33	4.1V	34	4.1V	35	NC	36	4.1V
37	4.1V	38	4.1V	39	4.1V	40	4.1V	41	4.2V	42	NC	43	4.1V	44	4.2V	45	4.2V
46	NC	47	4.2V	48	4.1V												

(On the CRT Board)

IC701 (TRIPLE VIDEO OUTPUT AMP.)

Pin-1	2.1V	2	2.2V	3	2.1V	4	GND	5	2.3V	6	207V	7	122V	8	126V	9	123V



Transistor	B	C	E
Q721	9.0V	0V	8.9V

C8AP